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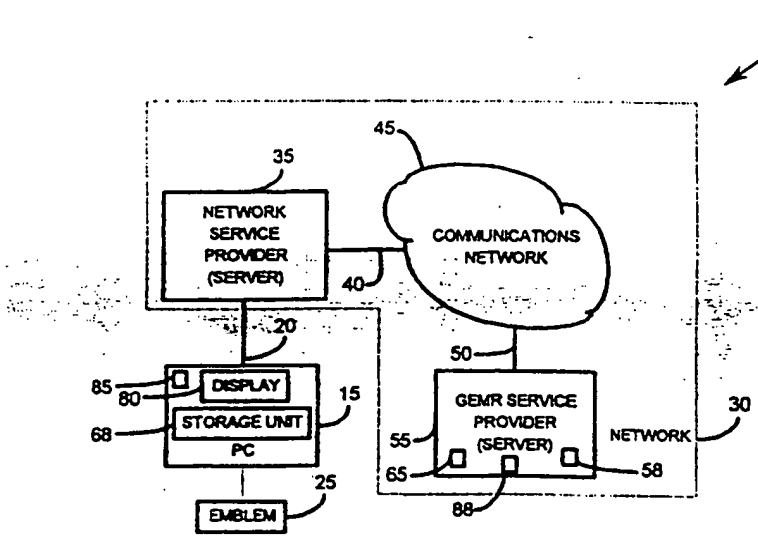

(57) Abstract

Systems and methods for a secure, confidential, subscriber-driven and updatable Global Electronic Medical Record (GEMR) are provided which is network-based and includes linked subscriber medical information with access limited by network address and password only to the subscriber or an authorized user. The systems and methods are typically used in the medical treatment of subscribers travelling abroad, and the systems include an emblem bearing the network address of the subscriber's GEMR on GEMR servers. The password is provided by the subscriber to the authorized user to access the subscriber's GEMR. In the preferred embodiment, only GEMR server-based subscriber medical information is available to be retrieved, while in the more preferred embodiment, institutional servers or other medical site servers are accessed to obtain additional subscribers medical information to be incorporated in the subscriber's GEMR. In the most preferred embodiment, the GEMR is Web-based with hyperlinks between portions of the subscriber's GEMR.

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GLOBAL ELECTRONIC MEDICAL RECORD

BACKGROUND OF THE INVENTION

The present invention relates generally to the field of medical records, and, more particularly, to the field of electronic medical records, and, even more particularly, to the field of accessible patient-driven electronic medical records for travelers.

An electronic medical record is a computer-stored collection of health information about a single patient. Previous electronic medical record systems have been developed for institutional use. They link clinics and hospitals in order to share their particular portion of information about individual patients with each other. These institutional-oriented electronic medical records, however, have a disadvantage in that they cannot meet the health needs of travelers. Yet, travel is a major feature of our society, and travelers are subject to becoming ill from preexisting conditions, accidents, and diseases in their new environments. The scope of domestic and international travel is shown by the following statistics. In

1995, Americans took 1.17 billion trips at least one hundred miles away from home, a forty five percent increase from 1985. In 1990, there were more than four hundred million international travelers, and the World Travel Organization estimates that the number will double by the year 2010. The rate of illness in travelers is highly variable, depending on the length of the trip, destination purpose, etc., but illness, or the anticipation of illness, is a common characteristic of travel.

When illness strikes someone who is away from home, their medical records are usually not available to an attending physician. Yet, access to the traveler's individual medical history and contact information can play a vital role in the traveler's diagnosis, treatment and survival. In an emergency, there may be no time to gather critical background medical information about the traveler. The traveler may be unconscious or too confused to provide this information. Wallet cards and wrist or neck emblems, by themselves, provide too little information to meet the needs of the examining physician. It is essential that an examining physician have full details about the traveler's complete medical history, including information about the preexisting conditions, medications, allergies, physician contacts, family contacts, past hospital admissions, etc. The electronic medical records that have been developed in the past cannot meet these needs.

There is, therefore, a real human need for a system for addressing these and other related problems.

SUMMARY OF THE INVENTION

For more information related to the present invention, reference is made to the book entitled "*The Internet for Everyone-A Guide for Users and Providers*," by Richard W. Wiggins (McGraw-Hill, Inc., 1995), and, in particular, chapters 1, 2, 3, 4, 12, 13, and 20 thereof, all of which are incorporated herein by reference.

According to the preferred embodiment of the present invention, a method and apparatus is used to enter and store personal health information in a patient-driven electronic medical record system for subsequent rapid access from

anywhere in the world. In its most preferred embodiment, the present invention is a patient-driven Global Electronic Medical Record (GEMR) which is based on the World-Wide Web (www, WWW, W3, or Web) and accessed through Web servers. Home pages on the Web are a new way to organize information on the Internet (the well-known global collection of, or network of, networks spanning international, national, regional, campus, and corporate boundaries), and since many of these Web pages are private and require password access, a similar approach can be used to provide confidential patient information to clinicians through the GEMR. Physicians anywhere in the world who have access to the Internet and valid security codes (passwords) can get this information rapidly by means of the GEMR.

The GEMR, in its most preferred embodiment, is a distinct, singular WWW site (home page), not a disparate collection of electronic objects pulled together by a hospital or clinic dedicated server. The GEMR provides complete and accurate personal health information of individual domestic and international travelers, and those individuals who are unable to provide an accurate medical history or are unable to communicate their current medical needs. This includes persons who are infants, children, mentally impaired, speech impaired, hearing impaired, senile, and foreigners who do not speak the language of their host country.

The GEMR can be accessed by any authorized user, anywhere in the world, with a personal computer (PC), a WWW browser, and access to the Internet, tools that are already globally deployed and rapidly evolving. The GEMR is originated by, and data is entered by, a subscriber (the patient), not by a physician or a healthcare worker. The GEMR is created preferably when the subscriber is well, not when he or she is ill.

The GEMR main directory contains files with the subscriber's vital information including, but not limited to, personal identifiers, emergency contacts, personal physicians, health insurance, advance directives and medical information. Access to each subscriber's GEMR is protected by a combination of a distinctive WWW address and password(s) known only to the subscriber. An audit trail is

created by registration of each user who accesses a subscriber's GEMR. Access is not based on user-authentication that is typically the preferred method for institutional-oriented electronic medical record systems, but, rather, based on providing the subscriber's password and network address.

Once the potential subscriber subscribes to the GEMR, the potential subscriber becomes a subscriber and a wrist emblem, neck emblem, or card (e.g., a plastic card) is sent to them from a company providing the GEMR (referred to hereinafter as the GEMR company). The wrist emblem, neck emblem, or plastic card is inscribed with the subscriber's name and WWW address of their GEMR, and, optionally, has a place thereon for the subscriber to inscribe their subscriber password(s) if he or she so chooses. The WWW address of the subscriber's GEMR and the subscriber's password(s) must be used in combination to link the subscriber, attending physician or healthcare worker, or an authorized GEMR technician to the subscriber's GEMR. The GEMR and subscriber's password are private and the property of the subscriber, and are controlled by the subscriber, not by an institution. The subscriber is, thus, empowered by his or her ownership of his or her own medical record.

Each subscriber's GEMR has additional files, and/or links, to institutional servers and server files, for the subscriber's hospital discharge summaries, clinical notes, laboratory reports, electrocardiograms, radiology reports, scanned documents, clinical photographs, audio files, and other relevant medical data. In addition to the subscriber, with the subscriber's authorization and an enabling password(s), physicians, healthcare workers, and/or technicians will be able to access these additional files in order to enter additional medical information with scanned or embedded data, or to provide services, addresses and pathways (links), e.g., but not limited to, Uniform Resource Locators (URLs) or Uniform Resource Identifiers (URIs) which specify resources on the Internet, to locate these data. Technicians will not have access to the files that contain the subscriber's personal identifiers, emergency contacts, personal physicians, health insurance and medical information unless the technician is authorized by the subscriber and is provided

with an enabling password(s) which is different than the subscriber's password(s) in some alternative embodiments, and is the same as the subscribers password(s) in other alternative embodiments. In addition, each GEMR is equipped with links to servers storing files with standard treatment protocols and medical Internet Web sites, for the benefit of the attending physicians.

The GEMR is also a personal identifier for subscribers who are unable to communicate their identity. This includes persons who are infants, children, mentally impaired, speech impaired, hearing impaired, senile, and foreigners who do not speak the language of their host country. For these subscribers, passwords are nullified.

It is, therefore, an object of the present invention to provide a medical record system which is patient-subscribable.

Another object of the present invention is to provide a secure electronic medical record system.

Another object of the present invention is to provide an Internet-based electronic medical record system.

Another object of the present invention is to provide a confidential Internet-based electronic medical record system.

Another object of the present invention is to provide a World-Wide Web-based electronic medical record system.

Another object of the present invention is to provide a confidential World-Wide Web-based electronic medical record system.

Another object of the present invention is to provide a world-wide personal medical record for travelers.

Another object of the present invention is to provide a world-wide electronic medical record for a traveler which is accessible by an attending healthcare worker for medical treatment of the traveler.

Another object of the present invention is to provide a world-wide electronic medical record for a traveler which is accessible, at any time, at any

place in the world, by an attending healthcare worker for medical treatment of the traveler.

Still another object of the present invention is to provide a world-wide medical record for individuals who are unable to provide an accurate medical history to an attending healthcare worker.

Still another object of the present invention is to provide a world-wide medical record for individuals who are unable to communicate their immediate medical needs.

Still another object of the present invention is to provide an electronic personal identifier for subscribers who are unable to communicate their identity.

Other objects, features and advantages of the present invention will become apparent upon reading and understanding the present specification, when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1A is a block diagram representation of the GEMR in accordance with a preferred embodiment of the present invention.

Fig. 1B is a block diagram representation of the GEMR in accordance with a more preferred embodiment of the present invention.

Fig. 2 is a block diagram representation of the structure of the GEMR in accordance with the preferred embodiment, the more preferred embodiments, and the most preferred embodiment of the present invention.

Figs. 3A and 3B are a flow chart representation for inputting and storing information in accordance with the preferred embodiments and the most preferred embodiment of the present invention.

Fig. 4 is a flow chart representation for accessing information in accordance with the preferred embodiments and the most preferred embodiment of the present invention.

Fig. 5 is a representation of an example home page of the GEMR company.

Fig. 6 is a representation of an example first page of an individual's GEMR.

Fig. 7 is a representation of an example personal identifiers portion of the GEMR.

Fig. 8 is a representation of an example emergency contacts portion of the GEMR.

Fig. 9 is a representation of an example personal physicians & dentist portion of the GEMR.

Fig. 10 is a representation of an example health insurance portion of the GEMR.

Fig. 11 is a representation of an example advance directives portion of the GEMR.

Figs. 12A-12D are representations of an example medical information portion of the GEMR.

Figs. 13A, 13B, and 13C are schematic representations of an example wrist emblem, an example neck emblem, and an example card, respectively, in accordance with preferred embodiments of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference is now made to the drawings wherein like reference numerals designate corresponding parts throughout the several figures. Fig. 1A shows a global electronic medical record (GEMR) system 10 in accordance with the preferred embodiment of the present invention. The GEMR system 10 includes, at least, a network 30, a PC 15, PC-server communication link 20, and an emblem 25. The network 30 includes, at least, a network service provider (server) 35, a GEMR service provider (server) 55, server-communications network links 40 and 50, and a communications network 45. Note that a network service provider (a nonlimiting example of which is an Internet Service Provider or ISP) is actually a private firm, or a local university or community college, through which the network (a nonlimiting example of which is the Internet) is accessed. A network

service provider has a server (nonlimiting examples of which are Web, Archie, Gopher (with or without Veronica), Lynx, FTP, Telnet, or Wide-Area Information (WAIS) servers) which provides access to the network or information on the network. Servers are host computers which could be mainframes, Unix workstations, or some other type of computer that run what is termed server software. Servers form an integral part of a larger concept known as the client/server paradigm in which computing transactions are distributed between the server software residing on the server (host) computer, and client software, residing on a user's workstation or personal computer (a client). The client requests service(s) of another computer, i.e., the server, and the server, which houses this service(s) that you or anyone else connected to it (there may be other intervening servers between the client and the server housing the service(s)) can use, if allowed, fulfills the request, which may include data as well as software. The client also manages most information presentation functionality (user interface), while the server also manages most database functionality and may include network switching functionality. Protocol defines communication between the client and the server.

Note that so far the discussion has involved the network service provider's server. Sometimes a network service provider's server, in performing its service, acts, at times, as either client or server. For this reason, servers are sometimes referred to as client/servers. An explanation of the terminology is afforded if one considers a situation that would occur, for example, if a client made a request to a first server to retrieve information and the first server had to link to a second server in order to retrieve the information. Hence, in this instance, the first server acts as a client to the second server and runs appropriate client-type software, although this software may differ from end user-type client software such as a browser (explained in more detail below). Therefore, it is to be understood that the scope of the present invention includes servers which are also client/servers for the network service providers as well as other servers accessed by the network service providers.

In a more preferred embodiment, a GEMR system 10' is shown in Fig. 1B which is similar to the system 10. The GEMR system 10' includes a network 30', a PC 15', PC-server communication link 20', and an emblem 25' which are similar to the network 30, the PC 15, the PC-server communication link 20, and the emblem 25, receptively. Similar to their corresponding counterparts in the network 30, the network 30' also includes a network service provider (server) 35', a GEMR service provider (server) 55', server-communications network links 40' and 50', and a communications network 45'. However, the network 30' additionally includes, at least, an institutional service provider(s) (server(s)) 75', other medical service provider(s) (server(s)) 95', and associated server-communications network links 60' and 70'.

In both GEMR systems 10 and 10', the personal computers 15, 15' are respectively coupled through the PC-server communication links 20, 20' to the network service providers 35, 35', which are, in turn, respectively coupled through the server-communications network links 40, 40' to the communications networks 45, 45'. Also, in systems 10 and 10', the communications networks 45, 45' are respectively coupled through the server-communications network links 50, 50' to the GEMR servers 55, 55'. In system 10', the institutional server(s) 75' and the other medical server(s) 95' are coupled to the communications network 45' through the server-communications network links 60' and 70', respectively. In particular alternative embodiments of system 10' in accordance with the present invention, the institutional server(s) 75', the other medical server(s) 95', and the server-communications network links 60' and 70' are accessed through private gateways. Note that for both systems 10 and 10', the PCs 15 and 15', the links 20 and 20', the network service provider servers 35 and 35', the links 40 and 40', the communications networks 45 and 45', the links 50 and 50', and the GEMR servers 55 and 55', respectively, provide a path for a user (i.e., the subscriber or an authorized physician, healthcare worker, or technician) to access a subscriber's Global Electronic Medical Record (GEMR) 100 which is described in more detail below.

It should be understood that links such as the PC-server communications links 20, 20', the server-communications network links 40, 40', 50, 50', 60', and 70' as used herein, in accordance with the scope of the present invention, include, but are not limited to: telephone links; PC modems; public switched telephone networks (PSTNs); packet switching networks; high speed data links; T1 lines; T3 lines; integrated services digital network (ISDN) lines; X digital subscriber lines (including asynchronous digital subscriber lines (ADSL); synchronous digital subscriber lines (SDSL); and high-bit-rate digital subscriber lines (HDSL)); cellular telephone-base station links; personal communications services (PCS); satellite links; fiber-optic lines (e.g., employing FDDI); coaxial cable; thinwire cable; twisted pair; cable modems; wireless access; repeaters; bridges; routers; brouters; gateways; and any other appropriate type of communication link, network hardware, or protocol (a language used by computer systems for communication over a network, including compression schemes) as would be understood by those of ordinary skill in the art. It should also be understood that the GEMR servers 55, 55' are not limited to a single server, and the scope of the present invention is meant to include, because of the distributed nature of many services, multiple servers as growth in demand, server load, or the need for new functionality dictates. Examples of systems which are to be included in the scope of the present invention are systems with primary servers, secondary servers, and caching servers, as well as systems with master servers and slave servers. With multiple servers, particular service requests (or portions thereof, as well as procedures necessary for the successful completion thereof) are handled by particular servers of the multiple servers in accordance with the system 10 or 10' design. All the above is also true for the servers 35, 35', 75', and 95'.

In systems 10 and 10', nonlimiting example embodiments of the respective emblems 25, 25' are a wrist emblem 25a, 25a', a neck emblem 25b, 25b', and a card 25c, 25c', which is preferably a plastic card, although it could be constructed of any suitable material, for example, paper, as schematically represented in Figs. 13A, 13B, and 13C, respectively. The emblems 25, 25' have inscribed thereon a

network address for the subscriber's (Global Electronic Medical Record) GEMR 100 in the GEMR servers 55, 55' of the systems 10, 10', respectively, as will be discussed in more detail below. Suffice it to say at this point that the network address for the subscriber's GEMR 100, in addition to the subscriber's security password (or security code), is required to gain access to proprietary portions of the subscriber's GEMR 100. This is because the GEMR 100 is patient-driven (subscriber-driven) and contains very personal medical record information of the subscriber. Hence, security and confidentiality of this information are of paramount importance. Therefore, in accordance with the present invention, both the subscriber's GEMR 100 network address and the subscriber's security password are essential in order to obtain entry to the proprietary portions of the subscriber's GEMR 100. And, referring to Figs. 1A and 1B, the dotted lines between the emblems 25 or 25' and the PCs 15 or 15', respectively, are indicative of the requirement that the network address of the subscriber's GEMR 100, which is inscribed on the emblems 25 or 25', be read by a user (i.e., the subscriber or an authorized physician, healthcare worker, or technician) from the emblems 25 or 25' in order to input the network address to the PCs 15 or 15', respectively (via, for example, input devices associated with the PCs 15 or 15', as described herein). The PCs 15 or 15' receive the subscriber's network address as input information (a query) which is interpreted by the client software and microprocessors 85 and 85' of the PCs 15 or 15', respectively, as a request to gain access to the subscriber's GEMR 100 through the system 10 or 10', respectively, as will described below in further detail. Note that the scope of the present invention includes the user memorizing the subscriber's network address from reading the emblem 25 or 25', or being told the subscriber's network address by the subscriber, a relative or friend of the subscriber, or another individual authorized by the subscriber, before the user inputs that address into the PCs 15 or 15'.

The PCs 15, 15' include, at least, respective displays 80, 80' (e.g., a monitor, a touch screen, or functional equivalents thereof), respective microprocessors 85, 85', respective storage units 68, 68' (i.e., non-volatile and

volatile storage units, examples of which include, but are not limited to, a hard disk drive, a floppy disk drive, a CD-ROM, read-write optical disk, a digital audio tape system, RAM, register memory, or functional equivalents thereof), input devices (e.g., a keyboard, a mouse, a light pen, voice recognition system, or functional equivalents thereof). In alternative embodiments, the PCs 15, 15' are instead so-called "dumb" network terminals of recent notoriety (a stripped down PC with minimal or no applications software stored on-board) which are linked to either a local server (or host), e.g., in an intranet employing Ethernet with TCP/IP (described below) compatibility or a remote (or terminal) server or host, which is, in turn, respectively coupled to the servers 35, 35' for access to respective networks 45, 45'. In some of these alternative embodiments, the PCs 15, 15' do not run client application software and connections are made to a host that runs the client application to communicate with a server. Also, for these alternative embodiments, to maintain drawing simplicity, the local server or the remote server (or the possible client software-running host) are understood, to be included in the communication links 20, 20'. Note that it is to be understood that in the present invention, the term PC, as broadly defined, describes general purpose computers, and includes, but is not limited to, that variety of computer commonly known as a "personal computer."

Note that TCP/IP are protocols, short for Transmission Control Protocol/Internet Protocol, which together let computers on the Internet communicate by providing reliable information (byte) delivery in order through network connections. TCP/IP are addressing and packetizing protocols which let information pass through many networks intact before reaching an ultimate destination. Connections are formed to TCP "ports," allowing a multiplicity of connections per machine. It is to be understood that the scope of the present invention includes, besides TCP/IP, other network protocols, for example, Digital Equipment Corporation's LAT (Local Area Transport) protocol, etc.

Moreover, in the most preferred embodiment, network 45' is the Internet with the GEMR server 55' being a Web server, wherein access from the PC 15' to

the GEMR server 55' is provided by the Web. Also, in the most preferred embodiment, the GEMR server 55' is TCP/IP-based. Note that the Web is a network-based hypertext document delivery system which supports links, an example of which includes, but is not limited to, hot links. Hot links are highlighted or underlined words or phrases which provide jump-off points to other material (files) or sections of the material (file or files) or to other documents (files) within a given document (file). In accordance with the present invention, these other documents (files) either reside on the GEMR server 55' or other servers. The goal of the Web is to work across hardware and operating system platforms and it is up to programmers of client and server software to ensure compatibility with the TCP/IP and HTTP (HyperText Transfer Protocol) protocols. TCP/IP is itself independent of the underlying hardware and the Web and Internet support open systems which are computers or networks that use standards (e.g., TCP/IP) to facilitate communication with computers or networks from different vendors or with different operating platforms. Likewise, the present invention conforms to these standards, but a password(s) (security code(s)) is required to obtain access to certain proprietary portions of a subscriber's GEMR 100 as discussed below in more detail.

Accordingly, in the most preferred embodiment, the PC 15' has a graphical interface and stores and runs a Web browser (nonlimiting examples of which are Netscape Navigator, Microsoft Explorer, Mosaic, Lynx, Cello, and others as would be understood by one of ordinary skill in the art). The browser is a software tool which allows a user to read or scan a file or document on the Web and provides user presentation. The browser employs hypertext mark-up language (HTML) which enables authors to write hypertext (or hypermedia, i.e., combinations of text, still images, video, or sound) links to access the Web. HTML is a set of structures which is compliant with the Standard Generalized Markup Language (SGML) ISO standard for describing structural information embedded within a document. The hypertext or markup documents are interpreted by clients for presentation to users. The browser is compatible with the HTTP

communications protocol which governs the dialog between client (browser) and server and specifies how Web clients fetch documents. In other words, the browser uses HTTP to communicate with servers on the Web. HTTP also provides ways for "meta-information" - information about a document that is not part of the document, such as the date it was last modified - to be exchanged and allows servers to offer different document types.

In addition, secure HTTP is under development which addresses the issue of moving data in a secure fashion across a public environment such as the Internet and which allows business transactions to occur in a secure manner. Thus, secure HTTP offers an environment for features such as authorization and charging. With secure HTTP, consumers are able to browse a service or product offering, such as the GEMR, fill out an application or order form, and subscribe to the service (e.g., to the GEMR) or buy the product, etc. by supplying a credit card number or checking account number for electronic funds transfer, or other payment means. With secure HTTP, or with an equivalent thereof as would be understood by one of ordinary skill in the art, both the GEMR subscriber and the GEMR company are assured (at least to as great an extent as possible) that the transaction is done in a secure manner.

At this point, all of the features of secure HTTP are not yet set. Nevertheless, all of the salient security features of secure HTTP which one of ordinary skill in the art would recognize as being important for the GEMR are included in the scope of the present invention. Note that with secure HTTP no changes to HTML should be required, but if changes in HTML do occur as secure HTTP evolves, such changes are also included in the scope of the present invention. Note that the ability to pay to subscribe to the GEMR off-line, which also further enhances transaction security, is also available to a new subscriber, for example, if the new subscriber pays to subscribe by mailing in a check or a credit card number, or by providing a credit card number via telephone, to the GEMR company.

Note that in certain embodiments in accordance with the present invention, the GEMR 100 (whether like systems 10 or 10') uses data encryption and other protection schemes to add a further level of confidentiality to the subscriber's medical records, especially for the GEMR blocks 112-117 which comprise the proprietary portion of the GEMR 100. Examples of the types of data encryption and other schemes used include, but are not limited to, single key cryptography, public key/private key cryptography, and client authentication, which are understood by one of ordinary skill in the art. In single key cryptography, encryption and decryption software must use the same private key to send and retrieve data, whereas in public key/private key cryptography, encryption software (e.g., PGP in the public domain) uses a public key for encryption of data, but to decrypt the data, a private key must be known and used. In client authentication, which could also be a possible substitute for the subscriber security password, so-called "Personal Certificates" and "Site Certificates" are used. In the most preferred embodiment, Personal certificates verify a person's identity on the Web to the GEMR servers 55 or 55', and will be obtainable from "Certificate Authorities," such as Verisign and GTE, when these become available. Site certificates verify that a person is really connecting to Web sites that he or she thinks they are connecting to. Through these certificates, the identity of a Web merchant or other Web server (e.g., the GEMR servers 55 or 55') can be verified before data transfer or transactions occur. Other embodiments of the present invention use accounting or system auditing utilities to log break-in attempts, and/or to prevent manipulation of confidential data, such as the GEMR blocks 112-117, in each packet of data fields (where packets are used to transfer data), the source address, the destination address, and the port for the particular service provider (e.g., network service providers 35 and 35') whose service is being used are examined to determine which services are allowed through a firewall associated with the GEMR servers 55 and 55' in these embodiments. The firewall examines every packet (e.g., packet filtering by routers) or may involve a gateway or custom software for routing with no default route.

Referring back to Figs. 1A and 1B, the GEMR servers 55 and 55' include, at least, respective storage units 65 and 65' (i.e., volatile and non-volatile memory, e.g., RAM, register memory, a hard disk drive, a floppy disk drive, a CD-ROM, or functional equivalents thereof), respective microprocessors 58 and 58' for controlling the storage units 65 and 65' (note that in both systems 10 and 10', the microprocessors 58 and 58' are coupled to, and control, the storage units 65 and 65', respectively, and the microprocessors 58 and 58' and the storage units 65 and 65' are coupled to respective data buses in the PCs 15 and 15', as would be understood by one of ordinary skill in the art), and are coupled to the respective server-network links 50 and 50', as indicated above. In certain other embodiments, the GEMR servers 55 and 55' also include respective displays 88 and 88' (e.g., a monitor, a touch screen, or functional equivalents thereof), input devices (e.g., a keyboard, a mouse, a light pen, voice recognition system, or functional equivalents thereof). Whether it is the preferred embodiment, the more preferred embodiment, the most preferred embodiment, or these certain other embodiments, the GEMR servers 55 and 55' are accessible for troubleshooting, upgrading, reprogramming, modifying, or altering in any way by a systems administrator or technician as would be understood by those of reasonable skill in the art.

In accordance with the preferred embodiments and the most preferred embodiment of the present invention, subscription to a service such as the systems 10 and 10' provides each subscriber with their personal GEMR 100 stored on either of the GEMR servers 55, 55'. For each subscriber, depending on whether the particular GEMR system being used is the system 10 or 10' (or is available to the subscriber), the GEMR 100 is set up by the individual subscriber and stored in their respective storage units 65, 65' of the GEMR servers 55, 55'. The GEMR 100, whose block diagram structural representation is schematically illustrated in Fig. 2, includes, at least, both personal and medical information blocks. These personal and medical information blocks (software objects in an object-oriented computer environment) encompass a Main Object block 105, additional file/institutional link (object) block 120, and medical link (object) block 130. The

Main Object block 105 includes objects, such as, at least, a Subscriber GEMR Home Page block 111, a Personal Identifiers block 112, an Emergency Contacts block 113, a Personal Physicians block 114, a Health Insurance block 115, an Advance Directives block 116, and a Medical Information block 117. The main object block 105 contains a database (the main files), i.e., the blocks 111-117, of the personal and medical records of a particular subscriber. Each of the constituent GEMR blocks 111-117 of the main object block 105 are linked and embedded in the main object block 105. Note that an object as used herein, in a broad sense, is a self-contained element that contains its own data and methods of processing that data.

Before continuing with a further description of the GEMR blocks 111-117, note that the main object block 105 is linked to a GEMR company Home Page block 110 which has an associated graphical user interface (in this case a network Home Page), an example of which could appear as in Fig. 5. Note that the GEMR company Home Page of the GEMR company Home Page block 110 may be searched and accessed through conventional network search engine queries. In the most preferred embodiment, the GEMR company Home Page is an Internet or Web Home Page which may be searched and accessed through Web search engines, for example, but not limited to, Yahoo!, Lycos, Alta Vista, etc. From an input field of the GEMR company Home Page of the GEMR company Home Page block 110, such as a "Subscribe" button field (Fig. 5), which could also be a text field, a potential subscriber may subscribe to the GEMR 100. Pressing the "subscribe" button will link the potential subscriber to the main object block 105 and a graphical user interface application form similar to Fig. 7 as described below will be displayed on the displays 80 or 80', or on displays 88 or 88' associated with the GEMR servers 55 or 55'. Once this graphical user interface is viewed (or any of the other graphical user interfaces described below are viewed), access may be made back to view the graphical user interface of the GEMR company Home Page block 110 by selecting a "back" screen button or by inputting a network address for the GEMR company Home Page block 110 (i.e., in the most preferred

embodiment, going to a URL of the GEMR company Home Page block 110 by using the browser) as would be understood by one of ordinary skill in the art (note that a "back" button and a "forward" button may be used similarly to freely move amongst graphical user interfaces associated with the proprietary GEMR blocks 112-117 once access has been granted to a user as described herein). Note also that the graphical user interface of the GEMR company Home Page block 110 also presents buttons or text fields which may be selected to access information such as frequently asked questions and to send e-mail (e.g., by using buttons similar to the "Frequently Asked Questions" and "E-Mail" screen buttons of Fig. 5). Moreover, note also that once a subscription is made to the GEMR 100, the subscriber need only go to his or her Subscriber GEMR Home Page block 111 (i.e., to a graphical user interface thereof, as discussed below), and not through the GEMR company Home Page block 110, to access their GEMR 100 information.

Reference is now made to Fig. 2 and the GEMR blocks 111, 112, 113, 114, 115, 116, and 117 (collectively referred to herein as GEMR blocks 111-117) which form the personal and medical records database. Some details about these blocks, and how these blocks are linked, are now provided. The Subscriber GEMR Home Page block 111 includes a file/database of information which presents a graphical interface to a user (i.e., the subscriber or an authorized physician or healthcare worker attending to the subscriber's medical needs, or an authorized technician) for gaining access to view the file/database contents of the other GEMR blocks 112-117 which comprise the proprietary portion of the GEMR 100. An example of the graphical user interface of the Subscriber GEMR Home Page block 111 which is presented to the user after the user has gained access to the graphical user interface is a screen or page such as is shown in Fig. 6 in the preferred (system 10) and more preferred (system 10') embodiments . The user gains access to the graphical user interface by connecting (i.e., by entering the network address for the subscriber's GEMR 100 either through the PCs 15 or 15') to the subscriber's GEMR 100 on the GEMR servers 55 or 55', or by directly connecting to the subscriber's GEMR 100 through the GEMR servers 55 or 55'

themselves. In the most preferred embodiment, the network address is an Internet Web address and the graphical user interface of the Subscriber Home Page block 111 is a Web home page. Upon viewing the graphical user interface of the Subscriber GEMR Home Page block 111, the user is prompted to register in appropriate text boxes as indicated in Fig. 6. These text boxes are so-called "form" (described below) text boxes in the most preferred embodiment.

Upon entering appropriate information to register as a user desiring to gain access to the subscriber's GEMR 100 via the Subscriber GEMR Home Page block 111, in order for the user to gain access to the other proprietary GEMR blocks 112-117 of the subscriber's GEMR 100, the user must enter the subscriber's password (security code) as prompted in Fig. 6 (note that in certain embodiment, personal certificates are used in lieu of the password as described above). The subscriber's password is a sequence or string of alphanumeric symbols which are entered as input to the graphical user interface in any suitable manner, for example, by entering the password in a text box as indicated in Fig. 6. The scope of the present invention includes entering the password via keyboard, light pen, mouse, etc., or audibly through a voice recognition system forming part of the systems 10 or 10'. The subscriber's password is preferably a 10 symbol sequence or string, but may be longer or shorter for security reasons as long as its length is sufficient enough to make the possibility of an unauthorized user discovering the subscriber's password extremely remote. Recall that the GEMR 100 is patient-driven (subscriber-driven), and to provide for the confidentiality of the subscriber's personal medical records, the combination of both the subscriber's unique GEMR 100 (Subscriber GEMR Home Page block 111) network address and the subscriber's unique security password is required to enter the proprietary GEMR blocks 112-117. Note that the scope of the present invention includes using a one or more additional password, in addition to the password discussed so far, for controlling access to certain portions or all of the proprietary GEMR blocks 112-117.

However, once a user has entered the proper address and security password information, the user enters the proprietary portion of the GEMR 100 as a link is formed to the Personal Identifier block 112 of the GEMR 100. At this point, a graphical user interface of the Personal Identifiers block 112, an example of which is depicted in Fig. 7, is presented to the user on the displays 80 or 80' or on the displays 88 or 88' of the GEMR servers 55 or 55', depending on which of the systems 10 or 10' is being employed. Once access is made to the proprietary GEMR blocks 112-117, it is possible to jump or switch (for example, but not limited to, by using hypertext links) to any one of the other blocks and back. This is generally indicated at the bottom of each of Figs. 7-12D where a user-selectible field (selectible via keyboard, mouse, voice recognition, light pen, touchscreen, etc., for example, as a so-called virtual selection, as would be understood by one of ordinary skill in the art), for example, a text field, is provided, although any other appropriate field, such as a user-selectible screen button field, would work equally well. The user-selectible field includes entries which each correspond to one of the proprietary GEMR blocks 112-117 as well as to other GEMR 100 tools. For example, as indicated in Figs. 7-12D, if the user-selectible field is a user-selectible text field, entries for such a field could include "Personal Identifiers," "Emergency Contacts," "Personal Physicians," "Health Insurance," "Medical Information," "Text Editor," "Search," "Exit," "and "Find Out More About **Global Electronic Medical Records**" (note that the scope of the present invention encompasses other appropriate fields as would occur to one of reasonable skill in the art). Selection of any one of the first five of these entries provides a link to, and jump or switch to, the corresponding one of the proprietary GEMR blocks 112-117 (see Figs. 8-12D) having the same name. Note that Figs. 12A-12D are screen examples of the information accessed through the Medical Information block 117. Selection of "Text Editor" provides on-screen access on the displays 80 or 80', or on the displays 88 or 88' of the GEMR servers 55 or 55' to a computer text editor tool which can be used to input or edit any text field of data (on page or screen; see, for example, Figs. 6-12D) that is user-selectible and

accepts user input or is user selectible and updatable, whereas selection of "Search" provides a tool to search objects or text within any one of the proprietary GEMR blocks 112-117 or within the files/databases of the additional file/institutional link block 120 (file/institutional link blocks 121-128) which are described below. Finally, selection of "Exit" provides, in certain embodiments, a means for exiting from the proprietary GEMR blocks 112-117 back to the Subscriber GEMR Home Page block 111 graphical user interface screen (for example, see Fig. 6) of the GEMR 100, while in other embodiments, it provides a means for exiting from the proprietary GEMR blocks 112-117 back to a browser home page on the PCs 15 or 15' (or on the GEMR servers 55 or 55'), or back to a browser provided by the network service providers (servers) 35 or 35' to the PCs 15 or 15', respectively. No matter what the embodiment, for security reasons, once exit is made from any of the proprietary GEMR blocks 112-117, the user must again enter the security password to re-enter any of proprietary GEMR blocks 112-117, for example, by going back to the graphical user interface presented to the user upon linking again to the Subscriber GEMR Home Page block 111.

Note that in the most preferred embodiment, the main object block 105 is an HTML object with the user-selectible field entries corresponding to the each of the proprietary GEMR blocks 112-117 being hypertext links between each and every one of the proprietary GEMR blocks 112-117. Note also that each of the example screens of Figs. 5-12D are nonlimiting representative examples of graphical user interfaces which are presented to the user. Other examples of these types of screens would occur to ones of ordinary skill in the art and such other examples are included within the scope of the present invention. Each of these screen or page example figures will be addressed as apparatus and methods of the present invention are discussed in detail below.

Returning to Fig. 2, the additional file/institutional link block 120 includes links to personal medical information (other files or databases) accessible from institutional network sites and/or from within the GEMR servers 55 and 55'. Link block 120 includes links (link objects), such as, at least, hospital discharge

summary link block 121, clinical notes link block 122, laboratory reports link block 123, electrocardiograms link block 124, radiology reports link block 125, scanned documents link block 126, clinical photographs link block 127, and other files link block 128, collectively referred to herein as file/institutional link blocks 121-128. In the preferred embodiment of system 10, the file/institutional link blocks 121-128 of the link block 120 are software links to storage locations (addresses) of files/databases stored in the storage unit 65 (e.g., but not limited to, storage in volatile memory or random access memory (RAM), register memory, hard disk memory, CD-ROM, digital audio tape systems, or equivalents thereof) which contain personal and medical information corresponding to the names of the individual file/institutional link blocks 121-128. When a user (the subscriber, an authorized attending physician or healthcare worker, or an authorized technician) of the system 10 wishes to retrieve the information corresponding to the link blocks 121-128 from the storage unit 65, a request (a query) is made from the PC 15 or the GEMR server 55 by the user selecting from a user-selectible input field presented to the user on the display 80 of the PC 15 or the display 88 on the GEMR server 55. Fig. 12D generally depicts an example representation of such an input field corresponding to the link blocks 121-128 in the form of user-selectible regions defined on the display 80 (or defined on the display 88 of the GEMR server 55) which are responsive to selection by an input device. These input devices include, but are not limited to, a mouse, a light pen, a keypad or keyboard, a finger (if the display 80 or the display 88 of the GEMR server 55 is a touchscreen), a voice recognition system, or functional equivalents thereof as would be understood by one of ordinary skill in the art. Moreover, a nonlimiting example of user-selectible regions defined on the display 80 of the PC 15 or the display 88 of the GEMR server 55 as generally depicted in Fig. 12D are software screen display buttons as would be understood by one of ordinary skill in the art. Once selection is made from amongst the choices in the user-selectible field, the microprocessor 85 of the PC 15 (or the microprocessor 58 of the GEMR server 55) interprets the selection as a query to retrieve the personal and medical

information corresponding to the particular one of the link blocks 121-128 related to the selection. The queried information is then provided from files/databases stored in the storage unit 65 of the GEMR server 55 to be displayed on the display 80 of the PC 15 (or the display 88 of the GEMR server 55 itself), or it is available for hard copy output to the user via peripheral (e.g., printer) connection to the PC 15 (or the GEMR server 55). Note that the information corresponding to link block 128 includes, in the preferred, the more preferred, and the most preferred, embodiments, audio information, for example, sound bites of heart sounds.

In certain alternative more preferred embodiments similar to the system 10', and in complete analogy to the preferred embodiment of the system 10, the link block 120 (i.e., the link blocks 121-128) includes links to corresponding file/database storage or memory locations (addresses) within the storage unit 65' for retrieval of their contents. In these alternative more preferred embodiments, the input capability to retrieve the personal and medical information such as depicted and described above in relation to Fig. 12D is also available. Moreover, in certain other alternative more preferred embodiments similar to the system 10', the link block 120 (i.e., the individual file/institutional link blocks 121-128) includes links to personal and medical information file/database storage or memory locations (addresses) in the institutional server(s) 75' for retrieval of their contents as well. The contents of these files/databases are retrievable for viewing by the user (or in hard copy) in much the same way as described above, except that the information is retrieved by a query from the PC 15' to the GEMR server 55' (or totally within the GEMR server 55' if display is to occur on a display of the GEMR server 55) which then links to, and retrieves, the files/database information from the institutional server(s) 75' to be displayed on the display 80' of the PC 15'. Therefore, in these other alternative more preferred embodiments, communications links external to the GEMR server 55' are required to link to the institutional server(s) 75' as described in more detail below. A technician may access the same information from the GEMR server 55' or from a computer (e.g., a PC), even from the PC 15', for viewing the same personal and medical

information corresponding to the names of the individual file/institutional link blocks 121-128 (Fig. 12D type capability also available) if the technician is authorized by the subscriber.

In addition to these alternative embodiments of the system 10', note that there are certain additional alternative more preferred embodiments of the system 10' in which the personal and medical information corresponding to the titles of the individual file/institutional link blocks 121-128 is, instead, retrieved (Fig. 12D type capability also available) as a combination of both file/database information stored in the storage unit 65' and files/databases from (or through) the institutional server(s) 75'. Here, the latter files/databases may be stored in the institutional server(s) 75' or linked through the institutional server(s) 75' to their storage location on another remote server(s). In other words, in these certain additional more preferred embodiments, the link blocks 121-128 contain hardware and/or software links to both the storage or memory locations (addresses) of files/databases within the storage unit 65' in the GEMR server 55' and to the storage or memory locations of files/databases within the institutional server(s) 75', depending on the design of these systems and the location of patient information. Note that access to these files/databases within (or through) the institutional server(s) 75', because of security reasons associated with the institutional server(s) 75', may require that the subscriber obtain permission, for example, by application to authorities in control of the institutional server(s) 75' at the time of subscribing to the GEMR. With such permission, or if no permission is required, a subscriber may be able to access (or make additional linkage to) the institutional server(s) 75' as described above and copy information stored in (or gain access to such information through) the institutional server(s) 75' which is associated with the GEMR 100 and the link blocks 121-128. The scope of the present invention encompasses the ability for the subscriber to obtain permission, if required, from the authorities in control of the information stored in (or obtained through) the institutional server(s) 75' in order to obtain that information associated with the link blocks 121-128. Moreover, the scope of the present

invention also encompasses the ability to obtain such information when no prior permission need be obtained.

The link blocks 121-128 are already provided for, or, at least, the capability to create them is already provided for, in the GEMR 100 (software), whether or not actual patient information is available to retrieve or store. Storage space is available in the storage unit 65' to store the links/addresses for the link blocks 121-128 once these addresses/links, and the information to which they pertain, become available for retrieval, whereupon a user may supply these links/addresses to the GEMR 100 and the GEMR server 55'. Note that in these certain additional alternative more preferred embodiments, communications links external to the GEMR server 55' are required to link to the institutional server(s) 75' as will be described below. Note also that in addition to the above certain additional more preferred embodiments, there are yet further more preferred embodiments in which all of the link blocks 121-128 only link to (or through) the institutional server(s) 75' to retrieve the personal and medical information corresponding to the names of the link blocks 121-128 from their storage or memory locations. For all embodiments which require access to the institutional server(s) 75' to obtain information associated with the link blocks 121-128, it is assumed that the subscriber either has obtained or can obtain any necessary permission from the institutional server(s) 75' authorities, as above, in order to make the information available to the subscriber or an authorized user of the GEMR 100, or no permission is required.

In the most preferred embodiment, the user-selectible inputs (selectible by a user input device, as described above), for example, the on-screen "buttons" (such on-screen buttons are understood by those of reasonable skill in the art) designated "Hospital Discharge Summary," "Clinical Notes," "Laboratory Reports," "Electrocardiogram," "Radiology Reports," "Scanned Documents," "Clinical Photographs," "Other files," "Treatment Protocols," and "Medical Internet Links" of the example page or screen of Fig. 12D are defined by what are termed "forms" by those of ordinary skill in the art. A form is a designated area of an HTML page

made available for user input. The form is defined by starting and ending "tags" with attributes for specifying how the form's input should be processed. The basic idea of a form is to define and present input fields to the user for typing in text information, and radio buttons, check boxes and pop-up menus for selecting items from option lists as would be understood by one of ordinary skill in the art. The form typically defines a set of action buttons, such as the user-selectible inputs of Fig. 12D, as just discussed, and may include a "Reset" button and a "Submit" button (discussed further below in reference to Figs. 5-12D) as well. The action buttons instruct the browser of the PC 15' (or the GEMR server 55') to take an action specified in an ACTION attribute of the form. The action is taken according to a method specified in a METHOD attribute of the form. The ACTION attribute uses a URL value and the action is taken with either a METHOD=GET or a METHOD=POST method, which determine the processing of information in the form.

When the GET method is employed, the browser forms a query URL which includes a current page URL (e.g., a URL of the Fig. 12D-type page) containing the form. In the query URL, the current page URL is followed by an ensuing question mark, which is followed by the values of the form's input fields and objects. The browser sends the query URL from the PC 15' to an executable script or program on the GEMR server 55' identified by the URL in the Action attribute. The script or program can, amongst other things, use this information to search and update databases (even search and update databases associated with the GEMR 100, for example, databases associated with, and linked to through, the link blocks 121-128, assuming prior permission is obtained by the subscriber, or no permission is required, to do so). For a particular screen or page like Fig. 12D, once an action button is selected, the corresponding link of link blocks 121-128 forms part of the query URL to start a search which is performed by the script or program in the GEMR server 55' to retrieve the personal or medical information sought. The process ends with the GEMR server 55' returning a new screen or page to the user on the display 80' of the PC 15', possibly one dynamically created

by the GEMR server 55' script. Alternatively, with the POST method, the contents of the form are sent to the script of the GEMR server 55' as a block of data to standard input. However, with either the GET or POST methods, a new HTML page (e.g., the contents of the personal or medical files/databases sought by the user in the GEMR 100) is sent back to the user for viewing on the display 80' or for hard copy output in response to what is written to standard output by the script.

The collection of interactions, as discussed above, between the browser of the PC 15' and the GEMR server 55' (or a browser within the GEMR server 55' and executable scripts or programs also located therein) is known as the Common Gateway Interface (CGI). Servers such as the GEMR servers 55 and 55' each have their own set of scripts and programs needed to process information from Web pages on that server. For servers running on Unix machines, some of which may be the GEMR servers 55 and 55' (in some embodiments), these scripts are usually written in the PERL or TCL languages and are stored in a directory with the name "cgi.bin," as would be understood by one of ordinary skill in the art. The scope of the present invention is inclusive of all of the above information on forms, attributes, scripts, etc. and certain other aspects thereof will be discussed as necessary in relation to Figs. 5-12D below.

Returning again to Fig. 2, it is observed that the file/institutional link blocks 121-128 of the additional file/institutional link block 120 are individually linked to the main object block 105 through a link 118 and respective links 118a-118f as indicated in Fig. 2. Depending on whether the GEMR system is the system 10 or 10', and depending on the design of the GEMR 100 as well as the physical location of the information to be retrieved through links of the file/institutional link blocks 121-128, the communications links 118a-118f of the additional file/institutional link block 120 (i.e., of the file/institutional link blocks 121-128) and the communications link 118 of the main object block 105 include respective hardware and/or software link portions of the server-network links 50, 50', the communications networks 45, 45', the server-communications network link 60'

(system 10' only), and the storage units 65, 65' (or, alternatively, internal data buses or other hardware links and software links, respectively, within the PCs 15, 15'), the GEMR servers 55, 55', or the GEMR 100 itself between the storage units 65, 65' and the link block 120 (i.e., the link blocks 121-128). In the system 10', personal and medical file information located in (or through) the institutional server(s) 75' and linked to by the file/institutional link blocks 121-128 is accessed and retrieved either through the link 60', the communications network 45', and the link 60' from the institutional server(s) 75' and sent to the PC 15' from the GEMR server 55' through the link 50', the communications network 45', the link 40', the server 35', and the link 20' (i.e., if not already stored in the GEMR server 55'), or the information is accessed through the internal data buses or other hardware links and software links (i.e., if already stored in the GEMR server 55'), for viewing by the subscriber or the authorized attending physician, authorized healthcare worker, or authorized technician after a query is made for this information from the PC 15'.

Like the linking between each of the constituent GEMR blocks 112-117 of the main file object 105 amongst themselves, each of the file/institutional link blocks 121-128 of the additional file/institutional link block 120 amongst themselves, as well as between each of the GEMR blocks 112-117 and each of the link blocks 121-128 are similarly linked as manifested in a user-selectible manner, the latter linkage occurring through the links 118 and 118a-118f. In the most preferred embodiment, links 118 and 118a-118f include software links, for example hypertext links such as were described above in reference to Figs. 7-12D for the proprietary GEMR blocks 112-117. As an example of such software links for links 118 and 118a-118f, in linking from the proprietary GEMR blocks 112-117 to the file/institutional link blocks 121-128, the user would select (queries) the "Medical Information" text entry in the user-selectible block appearing on the displays 80, 80' or the displays 88, 88' of the GEMR servers 55, 55' as indicated at the bottom of Figs. 7-12D. The microprocessors 85, 85' of the PCs 15, 15' (if using displays 80 or 80', respectively) or microprocessors 58, 58' of the GEMR servers 55, 55' (if using the GEMR server 55, 55' displays 88, 88', respectively)

interprets the selection (query) as a request to select information associated with the proprietary Medical Information block 117 and recover this information (and links) from appropriate memory addresses, directories, files, or databases in the storage 65, 65', respectively. The user would then be presented with the information associated with the Medical Information block 117 as generally indicated in Figs. 12A-12D. The user would then scroll down to, or hot link (from within the proprietary Medical Information block 117) to, the user-selectible input block of Medical Information block 117 as in Fig. 12D, and select an input entry with an appropriate input device (described above) to retrieve (from either a file/database on the GEMR servers 55, 55' or by linking to the institutional server(s) 75' for the desired information as discussed above.

Moreover, software linking via links 118 and 118a-118f from the link block 120 (i.e., from link blocks 121-128) back to the main object block 105 (i.e., back to any of the proprietary blocks 112-117) is accomplished by selection of a corresponding entry from a user-selectible block (not shown), for example, similar to the user-selectible text blocks at the bottom of Figs. 7-12D, which appear at the bottom of every screen of information associated with any of the link blocks 121-128 presented to the user once access has been made to that information (access to this information has been described above). Thus, links 118 and 118a-118f include all the software links necessary to implement the above linking scheme between main object block 105 and block 120 (i.e., the link blocks 121-128) in order for the user to obtained his or her desired information on the subscriber as would be understood by one of ordinary skill in the art.

In the systems 10 and 10', in addition to the block 120, as indicated in Fig. 2, the GEMR 100 also includes the medical link block 130. The medical link block 130 includes links to other medical files (addresses) within the GEMR servers 55, 55' (systems 10 and 10', respectively), and/or links to other medical network server(s) or sites 95' which are external to the GEMR server 55' (system 10' only). More specifically, the link block 130 includes objects, such as, at least, treatment protocol block 131 and a medical file and network site(s) block 132. The

block 131 has links to medical treatment protocols which may be retrieved from these other medical network sites (system 10' only) or from files within the GEMR servers 55, 55' (i.e., in storage units 65 and 65' of systems 10 and 10', respectively), whereas the block 132 has links to medical files from within the GEMR servers 55,55' (i.e., in storage units 65 and 65' of systems 10 and 10', respectively) and network sites (system 10' only) for other medical information, all of which may contain useful information to an authorized attending physician or healthcare worker in treating the subscriber. The blocks 131 and 132 are similar to the blocks 121-128 in the above alternative embodiments in which database information is retrieved from the GEMR servers 55, 55' (systems 10 or 10') or from an external server(s) like the server(s) 75' (system 10' only), except in this latter case the information is retrieved from the server(s) 95', although some of the information may come from particular institutional server(s) 75'.

The information associated with the link blocks 131 and 132 is not specific to the subscriber. In other words, the link blocks 131 and 132 neither contain links to files/databases (addresses) in the GEMR servers 55, 55' in systems 10 or 10, nor to network addresses (or URLs in certain embodiments) in system 10' which are particular to the subscriber and form part of the medical record of the subscriber. Instead, the link blocks 131 and 132 establish links to auxiliary medical information for the benefit and edification of the user (the subscriber or an authorized physician, authorized healthcare worker, or authorized technician). For particular embodiments of system 10' where access is made to other medical network server(s) or sites 95', it is to be understood that, in similarity to obtaining information through link blocks 121-128 for systems having access to institutional server(s) 75', the subscriber will obtain any necessary prior permission required by authorities in control of the medical network server(s) or sites 95' in order to obtain such information. Note that system 10, which has no links to institutional server(s) 75', also has no links to other medical server(s) or sites 95', yet system 10 uses the GEMR 100 which means that the link block 130 (i.e., link blocks 131 and 132) are links to files/databases or directories solely within the GEMR server

55. However, the GEMR 100 supports the establishment of links system 10 and institutional server(s) 75' or medical network server(s) or sites 95', thereby converting system 10 into an example of system 10' with all the features described above in relation to system 10'.

Like the link blocks 121-128 of the link block 120, the link blocks 131 and 132 of the link block 130 can be selected from a user-selectible block by an appropriate input device for accessing treatment protocols, medical files and network sites in similarity to what is described above in relation to the link blocks 121-128. An example of the user-selectible block includes user-selectible screen button blocks corresponding to the treatment protocols, medical files and network sites. Such a screen button block is illustrated in Fig. 12D, where it can been observed that a screen button labeled "Treatment Protocols" corresponds to the link block 131 and a screen button labeled "Medical Internet Links corresponds to the link block 132. The scope of the present invention includes alternative types of user-selectible blocks for the treatment protocols, medical files and network sites corresponding to the link blocks 131 and 132, including user-selectible text blocks and hypertext link blocks as would be understood by one of ordinary skill in the art.

The constituent blocks 131 and 132 of the medical link block 130 are coupled by communications links 119a and 119b, respectively to the communications link 118 of the main object block 105. Again, as for communications links 118 and 118a-118f, depending on whether the GEMR system is the system 10 or 10' and depending on the design of the GEMR 100 and the physical location of the information to be retrieved by linking with the link blocks 131 and 132, the communications links 119a and 119b include software links and hardware link portions of the server-network links 50', the network 45', the server-communications network link 70', and the storage units 65' (system 10' only), or, alternatively, internal data buses or links within the GEMR 100 itself between the storage units 65, 65' (systems 10 or 10') and the block 130 (the blocks 131 and 132). Also, like the linking between each of the constituent GEMR

blocks 112-117 of the main file object 105 amongst themselves, the link blocks 131 and 132 are linked to each other in similarity to the linking amongst each of the file/institutional link blocks 121-128, as well as in similarity to each of the GEMR blocks 112-117. Further, like both the proprietary GEMR blocks 112-117 and the link blocks 121-128, the link blocks 131 and 132 are linked as manifested in a user-selectible manner, the latter linkage occurring through the links 118 and 119a-119b. In the most preferred embodiment, links 118 and 119a-119b include software links, for example hypertext links such as were described above in reference to Figs. 7-12D for the proprietary GEMR blocks 112-117. As an example of such software links for links 118 and 119a-119b, in linking from the proprietary GEMR blocks 112-117 to the link blocks 131 and 132, the user also would select (queries) the "Medical Information" text entry in the user-selectible block appearing on the displays 80, 80' or the displays 88, 88' of the GEMR servers 55, 55' as indicated at the bottom of Figs. 7-12D. The microprocessors 85, 85' of the PCs 15, 15' (if using displays 80 or 80', respectively) or the microprocessor 58, 58' of the GEMR servers 55, 55' (if using the GEMR server 55, 55' displays 88, 88', respectively) interprets the selection (query) as a request to select information associated with the proprietary Medical Information block 117 and recovers this information (and links) from appropriate memory addresses, directories, files, or databases in the storage 65, 65', respectively. The user would then be presented with the information associated with the Medical Information block 117 as generally indicated in Figs. 12A-12D. The user would then scroll down to, or hot link (from within the proprietary Medical Information block 117) to, the user-selectible input block of Medical Information block 117 as in Fig. 12D, and select an input entry with an appropriate input device (described above) to retrieve (from either a file/database on the GEMR servers 55, 55' or by linking to the other medical server(s) or site(s) 95' (includes institutional server(s) 75' in some embodiments) for the desired treatment protocol, or medical files and network sites information in similarity to what was discussed above in relation to obtaining information corresponding to link blocks 121-128.

Moreover, software linking via links 118 and 119a-119b from the link block 130 (i.e., from link blocks 131 and 132) back to the main object block 105 (i.e., back to any of the proprietary blocks 112-117) is accomplished by selection of a corresponding entry from a user-selectible block (not shown), for example, similar to the user-selectible text blocks at the bottom of Figs. 7-12D, which appear at the bottom of every screen of information associated with any of the link blocks 131 or 132 presented to the user once access has been made to that information just like for link blocks 121-128 (described above). Thus, links 118 and 119a-119b include all the software links necessary to implement the above linking scheme between main object block 105 and block 130 (i.e., the link blocks 131 and 132) in order for the user to obtained his or her desired treatment protocol or medical file and network site information as would be understood by one of ordinary skill in the art.

At this point, attention is focused on the inventive methods of the preferred embodiment, more preferred embodiment, and the most preferred embodiment in accordance with the present invention. Reference is now made to Figs. 3A and 3B which together form a flow chart representation of a method 200 for inputting and storing information in the GEMR 100. Steps shown in Figs. 3A and 3B will be described in combination with Figs. 5-18 as appropriate to describe the GEMR 100. In step 202 of Fig. 3A, a potential subscriber accesses the GEMR 100 main network server (site) which presents information on the GEMR to the potential subscriber on a display of a PC (which may be on the display 80 of the PC 15 in certain embodiments). Fig. 5 shows an example way of presenting GEMR information to the potential subscriber in the form of a Web Home Page for a GEMR company providing the GEMR 100 in accordance with the most preferred embodiment of the present invention. For the preferred embodiments, other types of presentation information screens are possible depending on the particular network and client/server software applications being run on the PC and the GEMR 100 as would be understood by those of average skill in the art. In step 204, the potential subscriber is prompted to subscribe by selecting a user-selectible

field, a nonlimiting example of which is selecting (i.e., by using a mouse, trackball, light pen, touch screen, etc.) a subscribe screen button object on the home page as indicated in Fig. 5 in which case a new graphical user interface, for example a screen or display application form appears which is similar to Fig. 7, except that there is no text field block, like the hot link block at the bottom, but rather a field in which the subscriber creates his or her new security password for his or her subscription. If the potential subscriber chooses not to subscribe in step 204, then flow proceeds back to step 202 with the information on the GEMR again presented to the potential subscriber, or the potential subscriber can exit from the GEMR company's Home Page.

If, however, the potential subscriber decides to subscribe in step 204, then flow proceeds to step 206, where the potential subscriber is prompted to choose between receiving a hard copy subscription form (e.g., by mail or other delivery) or continuing with on-line subscription. Choosing to subscribe on-line, the potential subscriber fills in (first pass through) an on-line application form in step 208 and makes a payment to the company providing the GEMR 100 (e.g., by entering credit card information on-line which is sent to the company through the GEMR server 55 in certain embodiments or by telephoning in credit card information to a telephone number provided by the company, etc.) and the form is then reviewed for accuracy on-line in step 210. If the form is correct in step 210, flow proceeds as generally indicated in Figs. 3A and 3B through connectors "A" to step 212. However, if the form is not correct in step 210, flow proceeds back to step 208 for correction (second or subsequent pass through).

Alternatively, back in step 206, if the potential subscriber chooses to receive and fill out the hard copy subscription form, then the potential subscriber supplies his or her address in step 218, for example, on-line, by telephone, or by delivery to the company, all of which are nonlimiting embodiments. Proceeding on, once the potential subscriber receives the hard copy subscription form, he or she fills it in (first pass through) and sends the completed form to the GEMR company in step 220. The potential subscriber also sends a payment or provides credit card

information to the GEMR company along with the completed hard copy subscription form in similarity to what was discussed above with respect to subscribing on-line. Note that whether subscription is made on-line or by hard copy, once payment is made, the potential subscriber becomes a subscriber. A GEMR company technician then transcribes the hard copy information from the completed form into the on-line application form in step 222. Whether the new subscriber subscribes on-line or uses a technician to enter application form information on-line to subscribe to the GEMR, the information is entered in text fields, examples of which are similar to the screens illustrated in Figs. 7-12C, except that there are no hot link text fields at the bottom of each screen. These hot link text fields are created after the new subscriber subscribes to the GEMR. Text entered on-line via keyboard, mouse, etc. (i.e., by the input devices described above) during subscription or correction of existing information are correctable in that characters or groups of words are individually or block selectible for deletion, backspacing, overwriting, etc. as would be understood by one of ordinary skill in the art.

Subsequent to step 222, the on-line information entered by the technician is reviewed for accuracy in step 213. An inaccurate form in step 213 leads back to step 220 for an opportunity for the subscriber to correct (second or later passes through) entries or inaccuracies to the hard copy application form and sending (as described above or my any means) the corrected, or a new, hard copy application form back to the GEMR company from the subscriber. Note, however, that the scope of the present invention includes correcting the on-line form information originally entered by the technician by telephone call or other communications between a representative of the GEMR company and the subscriber, independent of whether the information was originally provided on-line or by hard copy.

However, if the form information is, instead, accurate in step 213, then flow proceeds through the connectors "A" as above to step 212 (Fig. 3B) where a record (i.e., the GEMR 100) is created for the subscriber and the subscriber information is stored in the storage unit 65 of the GEMR server 55. Note that

connectors A only connect Figs 3A and 3B for drawing space and size convenience and do not represent any type of step in method 200. In step 214, an enrollment notice is sent to the subscriber with a network address for the individual subscriber's GEMR 100. In the most preferred embodiment, the network address is a Web address for the subscriber's GEMR 100. Finally, in step 216, an emblem 25 (for example, see Figs. 13A, 13B, and 13C) , such as a wrist emblems 25a or 25a', neck emblems 25b or 25b', or cards (e.g., plastic cards) 25c or 25c' are created by the GEMR company and sent to the subscriber. The emblem has inscribed on it the network address for the subscriber's GEMR 100. Note that both the subscriber's network address and security password are required to access the subscriber's GEMR 100 as also was discussed above.

During subscription, in the preferred embodiments, the subscriber has the option of choosing the security password on-line with an appropriate input device, for example, with a keyboard attached to the PCs 15 or 15', or a keyboard attached directly to the GEMR servers 55 or 55' or the user may choose a password at a later time, including by mail or other delivery to the GEMR company, or by telephone call to the GEMR company. Note that if the subscriber uses the telephone for choosing a password, it is to be understood that the identification and authenticity of the subscriber must first be verified by other methods before a new or updated password is set up for the subscriber. On-line password selection is implemented with a graphical user interface, for example, a screen similar to Fig. 6, which is presented to the subscriber on the displays 80 or 80' or on the displays 88 or 88' of the GEMR servers 55 or 55' (depending on whether system 10 or 10' is being used), when the subscriber is first entering Personal Identifier information. In other embodiments, the subscriber has the option of allowing a security password to be chosen for them by the GEMR company which subsequently informs the subscriber of their security password. The security password may be changed at any time after subscription by the subscriber or an authorized technician using an update procedure described below in relation to Fig. 4. The security password may also be changed after subscription

by mail or other delivery, or by telephone call (assuming appropriate identification procedures are followed by the GEMR company) from the subscriber to the GEMR company.

More detail is now provided on entering information in, and the information content of, the GEMR 100 with further reference to Figs. 6-12D. Note that Figs. 6-12D are just one set of examples of possible screens associated with the subscriber's GEMR 100 and it is to be understood that the present invention includes other similar screens which would occur to one of ordinary skill in the art. In the preferred embodiments, the Subscriber GEMR Home Page block 111 has its graphical user interface screen which is presented to the user on the displays 80 or 80', or on the displays 88 or 88' attached to the GEMR servers 55 or 55'. An example graphical user interface of the Subscriber GEMR Home Page block 111 is a screen with, at least, a text field identifying the network address of the Subscriber GEMR Home Page block 111 of the subscriber's GEMR 100, a text field identifying the screen as a the GEMR 100 for the subscriber and identifying the subscriber by name, a text field for registering the user by input, a text field for entering the subscriber password, a "Reset" text field or screen button for the user to reset or make corrections to their entered user registration information and for the user to reset or make corrections to the entered subscriber password in the subscriber password text field, and a "Submit" text field or screen button for the user to submit the entered subscriber password in the subscriber password text field for verification and validation before permitting the user to access the proprietary GEMR blocks 112-117, the links blocks 121-128, and the link blocks 131 and 132. All the above entries (inputs) for the graphical user interface of the Subscriber GEMR Home Page block 111, as well as for all entries (inputs) for graphical user interfaces described herein for any of the other proprietary GEMR blocks 112-117, whether by text entry (input) or by button selection, are made with an appropriate input device, for example, a keyboard, mouse, etc. as described above.

A example graphical user interface of the Subscriber GEMR Home Page block 111 having characteristics similar to what is described above is shown in Fig. 6. In the most preferred embodiment, the graphical user interface of the Subscriber GEMR Home Page block 111 is a Web home page for the Subscriber GEMR Home Page block 111 and the subscriber's GEMR 100 and the network address in the network address text field of the Subscriber GEMR Home Page block 111 is an Internet URL.

A screen similar to Fig. 7 is one possible example of the graphical user interface of the Personal Identifiers block 112 which could be first presented to the user after submitting the correct subscriber security password as a starting point in the subscriber's GEMR 100 from which access is provided to all of the proprietary GEMR blocks 112-117 and files/databases therein. Fig. 7 includes, at least, a text field identifying the network address of the Personal Identifiers block 112, at least one image field for a scanned and/or digitized photograph of the subscriber, a text field identifying the name, address, date of birth, telephone number(s), Social Security number, occupation, sex, height, weight, race, eye color, hair color, religion, scars or marks, and primary language (if not English) of the subscriber. In addition, a hot link text field as described above is included near the bottom of Fig 7. In the most preferred embodiment, the graphical user interface of the Personal Identifiers block 112 is a Web page and the network address in the network address text field of the Personal Identifiers block 112 within the GEMR 100 is a URL. Note that, upon subscription, the subscriber is requested to optionally submit his or her ID or passport-type photograph(s) to the GEMR company for scanning and/or digitizing and insertion into a portion (the image field) of the screen of the Personal Identifiers block 112 of the subscriber's GEMR 100 for viewing upon access to the GEMR 100 as generally indicated in Fig. 7.

Reference is now made to Fig. 8 which is a representation of a possible example screen for a graphical user interface of the Emergency Contacts block 113. Like blocks 111 and 112, the graphical user interface of the Emergency Contacts block 113 includes a text field identifying the network address of the

Emergency Contacts block 113 and a hot link text field as described above. Like Fig. 7, in Fig. 8, the hot link text block described above is also included near the bottom. The graphical user interface of the Emergency Contacts block 113 also includes a text field for identifying the names, addresses, relationships, and telephone number(s) of a person(s) to contact in case of emergency which is (are) entered (input) by the subscriber or an authorized technician. In the most preferred embodiment, the graphical user interface of the Emergency Contacts block 113 is a Web page and the network address in the network address text field of the Emergency Contacts block 113 within the GEMR 100 is a URL.

Fig. 9 is a representation of a possible example screen for a graphical user interface of the Personal Physicians & Dentist block 114. Like blocks 111-113, the graphical user interface of the Personal Physicians block 114 includes a text field identifying the network address of the Personal Physicians & Dentist block 114 and a hot link text field as described above. The graphical user interface of the Personal Physicians & Dentist block 114 also includes a text field for identifying the names, specialties, and telephone number(s) of the subscriber's personal physicians and dentist(s) which are entered (input) by the subscriber or an authorized technician. In the most preferred embodiment, the graphical user interface of the Personal Physicians & Dentist block 114 is a Web page and the network address in the network address text field of the Personal Physicians & Dentist block 114 within the GEMR 100 is a URL.

Fig. 10 represents a possible example screen for a graphical user interface of the Health Insurance block 115. Like blocks 111-114, the graphical user interface of the Health Insurance block 115 includes a text field identifying the network address of the Health Insurance block 115 and a hot link text field as described above. The graphical user interface of the Health Insurance block 115 also includes a text field for identifying the names, and telephone number(s) of the subscriber's health insurance company(ies), as well as the subscriber's health insurance policy or group numbers, which are entered (input) by the subscriber or an authorized technician. In the most preferred embodiment, the graphical user

interface of the Health Insurance block 115 is a Web page and the network address in the network address text field of the Health Insurance block 115 within the GEMR 100 is a URL.

A possible example screen for a graphical user interface of the Advance directives block 116 is represented in Fig. 11. Like blocks 111-115, the graphical user interface of the Advance directives block 116 includes a text field identifying the network address of the Advance Directives block 115 and a hot link text field as described above. The graphical user interface of the Advance Directives block 116 also includes a text field for identifying the names, relationships, and telephone number(s) of a person(s) to contact for information on the subscriber's Living Will, for information about the subscriber's Durable Power of Attorney for Health Care, for information about the subscriber's Organ Donation Directives, and for any medical information that the subscriber does not wish to disclose in the Medical Information block 117 of his or her GEMR 110. All of the information content in the graphical user interface's text fields of the Advance Directives block 116 is entered (input) by the subscriber or an authorized technician. In the most preferred embodiment, the graphical user interface of the Advance Directives block 116 is a Web page and the network address in the network address text field of the Advance Directives block 116 within the GEMR 100 is a URL.

Figs. 12A-12D represent possible example screens for a graphical user interface of the Medical Information block 117. Note that in certain embodiments in accordance with the present invention, the screens shown in Figs. 12A-12D comprise one page of information retrieved by a query to the GEMR 100 which, because of the size of the page, require the user to scroll down or up between the screen to view all of the information contained in the screens as would be understood by one of ordinary skill in the art. In other embodiments, hot links are provided to jump between portions of these screens, while in still other embodiments, a combination of scrolling and hot links are provided for (as in, for example, the most preferred embodiment). In yet other embodiments, each of the

medical information screens comprise multiple pages of information rather than one page with scrolling capability and/or hot links therebetween, as above.

Like blocks 111-116, the graphical user interface of the Medical Information block 117 includes a text field identifying the network address of the Medical Information block 117 and a hot link text field as described above is present at the bottom of each screen. The graphical user interface of the Medical Information block 117 also includes text fields for identifying the health status, blood type and current medical conditions (like Fig. 12A);current medications, allergies and immunizations record (like Fig. 12B); and hospitalizations, pregnancies and special needs (like Fig. 12C) of the subscriber within the GEMR 100, all of which are entered (input) by the subscriber or an authorized technician. An example text field for health status, as indicated in Fig. 12A, includes, at least, text subfields for user-selectible for "Excellent," "Good," "Fair," "and "Poor." The text field for blood type includes, at least, text subfields user selectible for A+, A-, B+, B-, AB+, AB-, O+, O-, and Don't Know. The text field for Current Medical Conditions includes, at least, text subfields for Heart & Circulation, Metabolic, Blood, Eyes & Ears, Intestine, Liver & Spleen, Respiratory, Kidney, Neuromuscular conditions, and Other Conditions of the subscriber. As an example, the text subfield for Heart & Circulation includes user-selectible text subfields for Abnormal EKG, Angina, Cardia Dysrhythmia, Collagen-Vascular Disease, Congenital Heart Disease, Congestive Heart Failure, Coronary Bypass Graft, Heart Valve Prosthesis, Heart Transplant, Hypertension, Hypertrophic Cardiomyopathy, Mitral Valve Prolapse, Pacemaker, and Situs Inversus. Similarly, the text subfields for Metabolic through Neuromuscular contain further subfields to indicate the Current Medical Condition of the subscriber.

An example text field for Current Medications, as indicated in Fig. 12B includes, at least, text subfields for None, and Trade or Generic Name, Dose, and How Often taken. Likewise, the text field for Allergies includes, at least, text subfields for None, Drug, Food, Insect, Vaccine, and Usual Reactions. Moreover,

the text field for Immunizations includes, at least, text subfields for various diseases and dates of immunizations as represented in Fig. 12B.

In addition, an example text field for Hospitalizations, as indicated in Fig. 12C, includes, at least, text subfields for Condition, Date, Hospital, Hospital Telephone Number, Doctor, Doctor telephone Number. Similarly, text subfields are included for the Pregnancies text field and the Special Needs text fields, as represented in Fig. 12C. Note that the screens shown in Figs. 12A-12C are merely examples and variations of the medical and contact information text fields provided in the GEMR 100, and the arrangement, updating, inclusion, or lack of inclusion, of certain similar text fields as would occur to one of ordinary skill in the art are included within the scope of the present invention.

Finally, as discussed above, for the retrieval of subscriber additional medical information, when a user of the system 10 or 10' wishes to retrieve the information corresponding to the link blocks 121-128, a request (a query) is made by the user selecting from a user-selectible input field presented to the user. Fig. 12D generally depicts the example representation of such an input field in the form of user-selectible screen regions (on displays 80 or 80', or the displays 88 or 88' associated with the GEMR servers 55 or 55') which are responsive to selection by an input device. The example screen of Fig. 12D includes, at least, a text field for Additional Medical Information and user-selectible text fields or screen buttons to select and retrieve Hospital Discharge Summaries through Medical Internet Links, as described above. Once selection is made from amongst the choices in the user-selectible field, the queried information is provided from files/databases stored in the GEMR servers 55 or 55', or it is available for hard copy output to the user via a peripheral (e.g., printer) device. In the most preferred embodiment, the graphical user interface of the Medical Information block 117 is a Web page or pages with possible screens like Figs 12A-12D, and the network address in the network address text field of the Medical Information block 117 within the GEMR 100 is a URL.

Consideration is now given to methods for accessing a subscriber's GEMR 100 of the present invention. Reference is now made to Fig. 4 which is a flow chart representation of steps of a method 300 of reviewing and updating the GEMR 100 in accordance with the preferred, more preferred, and most preferred embodiments of the present invention. Reviewing and updating the GEMR 100 for a particular subscriber can occur for any of various reasons, including, but not limited to, emergency situations in which an authorized physician or healthcare worker is treating an injured or sick subscriber and may need vital medical information that may help with the treatment of the subscriber. This could occur, for example, while the subscriber is away from home traveling. Also, review and update could occur if the subscriber wanted to replace old information in his or her GEMR 100 with new information, for example, new medical test results or address changes, and the like, or if the system 10 was converted to system 10' with the addition of newly linked institutional server(s) 75' or other medical server(s) or network sites 95'. In this case, the subscriber may want to add a link corresponding to one of the link blocks 121-128, for example, by specifying a network address to one of the institutional server(s) 75' for additional personal medical records. The new link (address) would be stored in the storage unit 65' of the GEMR server 55', respectively. Recall that the link blocks 121-128 are already provided for, or, at least, the capability to create them is already provided for, in the GEMR 100 (software), whether or not actual patient information is available to retrieve or store. Storage space is available in the storage units 65' to store the links/addresses for the link blocks 121-128 once these addresses/links, and the information to which they pertain, become available for retrieval, whereupon a user may supply these links/addresses to the GEMR 100 and the GEMR server 55'. Note that for both system 10 (GEMR server 55) and system 10' (GEMR server 55') these links/addresses may be for personal medical data/information to be stored in, and accessed from, the respective storage units 65 and 65' in some embodiments (described above) rather than from the institutional server(s) 75'.

Returning again to Fig. 4, in step 302, the user (the subscriber, or an authorized physician, healthcare worker, or technician) begins to access the subscriber's GEMR 100 at either the PC 15 (system 10) or the PC 15' (system 10') to connect to the GEMR server 55 (system 10) or the GEMR server 55', respectively. Alternatively, the user begins to access the subscriber's GEMR 100 at the GEMR servers 55 or 55' directly. In step 304 the user enters the subscriber's network address on the PCs 15 or 15' (or on the GEMR servers 55 or 55') in order to access the subscriber's GEMR 100 by first accessing the Subscriber GEMR Home Page block 111. Recall that in order to access the GEMR 100 via the Subscriber GEMR Home Page block 111, the subscriber must be a valid subscriber, his or her GEMR 100 must already exist, and the user must have the subscriber's valid security password. Also, recall that in the most preferred embodiment, the GEMR servers 55, 55' are Web servers and each subscriber's GEMR 100 has a URL address on the Internet.

Once the Subscriber GEMR Home Page block 111 belonging to the subscriber is accessed, the user is prompted in step 306 to register his or her information, including the user's name and address (see Fig. 6) on-line on the graphical user interface of the Subscriber GEMR Home Page block 111 belonging to the subscriber. Once the user completely registers by supplying all the information requested (i.e., inputs all the information in the initially blank text field block under "Please register" in the center region of a screen corresponding to Fig. 6) via, for example, a keyboard or another appropriate input device (described above) attached to the PC 15, then in step 308, the user enters the subscriber's security password in the password field of the graphical user interface of the Subscriber GEMR Home Page block 111 belonging to the subscriber. From the graphical user interface of the Subscriber GEMR Home Page block 111 belonging to the subscriber, the only way to gain access to the proprietary portions of the subscriber's GEMR 100 (i.e., proprietary GEMR blocks 112-117 and link blocks 121-128) is by supplying all registration information and entering a valid subscriber security password associated with the Subscriber GEMR Home Page block 111

belonging to the subscriber. If the password is invalid as determined in step 310, then flow proceeds back to step 308 to allow the user to re-enter the valid password. If in step 310, it has been determined that the valid password has been entered, then flow continues to step 312 in which the subscriber's medical information may be reviewed and/or updated, or new subscriber medical information, or links (to files/databases or network addresses) thereto, may be entered and stored in the subscriber's GEMR 100 as previously described.

Note that the GEMR 100 provides complete and accurate personal health information of individual domestic and international travelers, and, as briefly discussed above, of those individuals who are unable to provide an accurate medical history or are unable to communicate their current medical needs. This includes, but is not limited to, persons who are infants, children, mentally impaired, speech impaired, hearing impaired, senile, and foreigners who do not speak the language of their host country. For these people, who may be unable to communicate their identity, the GEMR 100 is also a personal identifier and emergency contact identifier. Therefore, there are particular embodiments of the GEMR 100 in accordance with the present invention in which the password requirement to access the proprietary portions and other portions of the GEMR 100 (i.e., the blocks 112-117, blocks 121-128, and blocks 131 and 132) are nullified. An example of such an embodiment is one for which the network address is a particular type of network address which is recognized as identifying a GEMR 100 for these people. In other embodiments, only access to the Personal Identifiers block 112 and the Emergency Contacts block 113 of the GEMR 100 is provided with the password requirement being nullified. Alternatively, in some embodiments, only personal identification and emergency contacts information are entered in the GEMR 100 (i.e., associated with Personal Identifiers block 112 and the Emergency Contacts block 113) and the password requirement is nullified, and as such, these embodiments would render the GEMR 100 (i.e., like the systems 10 and 10') as a global electronic identification system. Note that for these

subscribers, an adult or guardian would enter a subscription to the GEMR to create a GEMR 100 on their behalf.

It is intended that the scope of the present invention also include various other embodiments. Accordingly, it should be understood that the each of the embodiments disclosed herein, including the preferred, more preferred, and most preferred embodiments, includes features and characteristics which are considered independently inventive. Thus, the disclosure of variations and alterations of these preferred embodiments are intended only to reflect on the breadth of the scope of the present invention without suggesting that any of the specific features and characteristics of these preferred embodiments are more obvious or less important.

Regarding specific application of the many inventive aspects of the present invention, a variety of environmental and economic considerations are understood to contribute to the alteration or omission of selected inventive aspects. For example, in certain applications of the present invention, it may be more desirable or cost effective to use the system 10 of the preferred embodiment to cover the subscriber's most basic medical needs for an authorized attending physician or healthcare worker rather than the system 10' of the more preferred or most preferred embodiments.

While the embodiments of the present invention which have been disclosed herein are the preferred forms, other embodiments of the present invention will suggest themselves to persons skilled in the art in view of this disclosure. Therefore, it will be understood that variations and modifications can be effected within the spirit and scope of the present invention and that the scope of the present invention should only be limited by the claims below. Furthermore, the corresponding structures, materials, acts, and equivalents of all means or step plus function elements in the claims below are intended to include any structure, material, or acts for performing the functions in combination with other claimed elements as specifically claimed.

What is claimed is:

1. A global electronic medical record system, comprising:

a network, including

a network service provider server,

a global electronic medical record server having a storage unit and a secure global electronic medical record stored in the storage unit, the secure global electronic medical record identifiable by a network address and having an associated security code, and

a communications network coupled to the network service provider server and the global electronic medical record server;

an emblem having the network address for the secure global electronic medical record inscribed thereon; and

a computer coupled to the network,

wherein said computer, the network service provider server, the communications network, and the global electronic medical record server provide a path to access the secure global electronic medical record in the global electronic medical record server upon input of the network address from said emblem and the security code to said computer.

2. The system of claim 1, wherein said network further includes institutional servers and other medical servers coupled to the communications network.

3. The system of claim 1, wherein said emblem is one of a wrist emblem, a neck emblem, and a card.

4. The system of claim 1, wherein said network is the World-Wide Web.

5. The system of claim 1, wherein said network is the Internet.

6. The system of claim 1, wherein the network address is a Uniform Resource Locator.

7. The system of claim 1, wherein said network service provider is an Internet service provider.

8. The system as claimed in claim 1, wherein the secure global electronic medical record includes text and image information.

9. The system as claimed in claim 1, wherein the secure global electronic medical record includes audio information.

10. The system of claim 1, wherein the secure global electronic medical record is created by, and updatable by, a subscriber.

11. A global electronic medical record stored in a server for implementation on a network, comprising:

a main files object including

a home page block, and

a first plurality of proprietary personal and medical information blocks, wherein the home page block is linked to the first plurality of proprietary personal and medical information blocks and each block of the first plurality of

personal and medical information blocks are linked to other blocks of the first plurality of personal and medical information blocks; and

an additional files/links institutional object including a second plurality of personal and medical information blocks, wherein each of the second plurality of personal and medical information blocks of the additional files/links institutional object are linked to said main files object.

12. The record of claim 11, further comprising a medical file/network site object including a plurality of medical information blocks linked to said main files object.

13. A method of creating a global electronic medical record for a subscriber in a global electronic medical record system, said method comprising steps of:

viewing information on the global electronic medical system while connected on-line to the system;

filling out and submitting an application form to subscribe to the global electronic medical record system;

creating the global electronic medical record from the application form;

storing the global electronic medical record in the global electronic medical record system; and

sending an emblem to the subscriber with a network address inscribed thereon for identifying a location for the global electronic medical record.

14. The method as claimed in claim 13, wherein said creating step includes entering subscriber medical information into the global electronic medical record.

15. The method as claimed in claim 13, further comprising a step of electronically paying for subscription to the global electronic medical record.

16. The method as claimed in claim 13, wherein said creating step includes a step of entering personal medical information into the global electronic medical record necessary useful for medical treatment of the subscriber.

17. The method as claimed in claim 13, wherein said creating step includes a step of creating the global electronic medical record through a plurality of linked blocks.

18. The method as claimed in claim 13, wherein said creating step includes a step of creating the global electronic medical record in a plurality of graphical user interfaces linked through hypertext links.

19. A method of accessing a subscriber's global electronic medical record in a global electronic medical record system by a user, the method comprising steps of:

begin accessing the subscriber's global electronic medical record on a computer;

entering a network address for the subscriber's global electronic medical record on the computer;

registering the user in the subscriber's global electronic medical record; and

entering a security password, which only in combination with the network address entered in said entering a network address step, will allow access to proprietary portions of the global electronic medical record.

20. The method of claim 19, further comprising a step of reviewing medical information in the subscriber's global electronic medical record.

21. The method of claim 19, further comprising a step of entering new medical information in the subscriber's global electronic medical record.

22. The method of claim 19, further comprising a step of updating medical information in the subscriber's global electronic medical record.

23. The method of claim 19, further comprising a step of viewing a network home page for the subscriber's global electronic medical record upon entering the network address.

24. The method as claimed in claim 19, further comprising a step of accessing proprietary portions of the subscriber's global electronic medical record through hyperlinks amongst the proprietary portions.

25. The method as claimed in claim 19, wherein said entering a network address step includes a step of entering a World-Wide Web address for the subscriber's global electronic medical record.

26. A method of accessing a global electronic medical record of a subscriber in a global electronic medical record system on the Internet, said method comprising steps of:

accessing a home page of the global electronic medical record through an Internet service provider by entering an Internet address for the global electronic medical record on a computer coupled to the Internet service provider; and

providing to the global electronic medical record system, through an input field on the home page, a security code recognizable to the global electronic medical record system and associated with the global electronic medical record, which, only in conjunction with the Internet address of the global electronic medical record, allows access to the proprietary portions of the global electronic medical record.

27. The method as claimed in claim 26, further comprising a step of retrieving information from the global electronic medical record at the computer.

28. The method as claimed in claim 26, further comprising a step of retrieving information from the global electronic medical record at the computer using hypertext links in the proprietary portions.

29. A global electronic medical record system used for identification of a subscriber, comprising:

a network, including

a network service provider server,

a global electronic medical record server having a storage unit and an identification portion of a global electronic medical record identifying the subscriber stored in the storage unit, the global electronic medical record identifiable by a network address, and

a communications network coupled to the network service provider server and the global electronic medical record server;

an emblem having the network address for the global electronic medical record inscribed thereon; and

a computer coupled to the network,

wherein said computer, the network service provider server, the communications network, and the global electronic medical record server provide a path to access the identification portion of the global electronic medical record identifying the subscriber in the global electronic medical record server upon input of the network address from said emblem to said computer.

30. The system of claim 29, wherein the global electronic medical record server has an emergency contacts portion identifying emergency contacts for the subscriber stored in the storage unit.

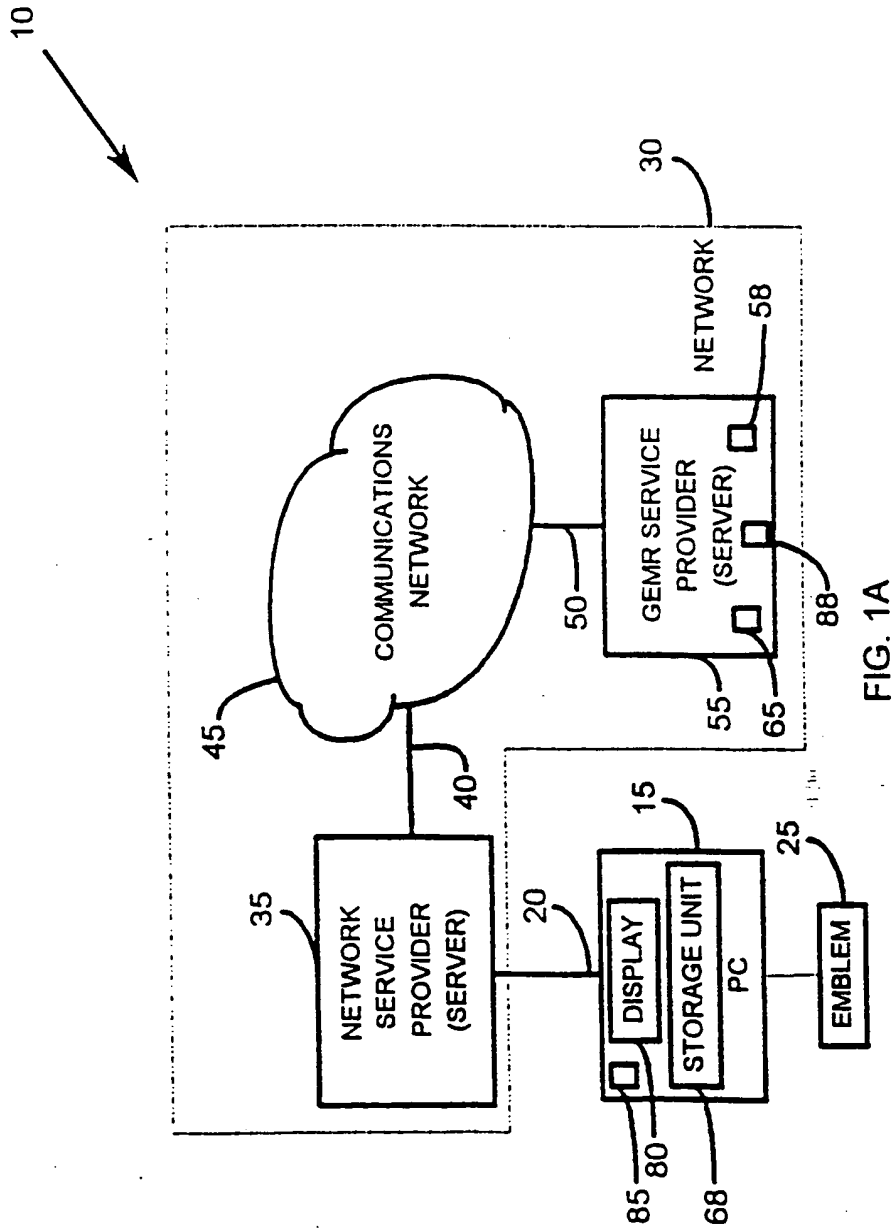
10
30
NETWORK
58
COMMUNICATIONS NETWORK
GEMR SERVICE PROVIDER (SERVER)
50
45
55
65
88
40
35
NETWORK SERVICE PROVIDER (SERVER)
20
15
DISPLAY
STORAGE UNIT
PC
25
EMBLEM
85
80
68

FIG. 1A

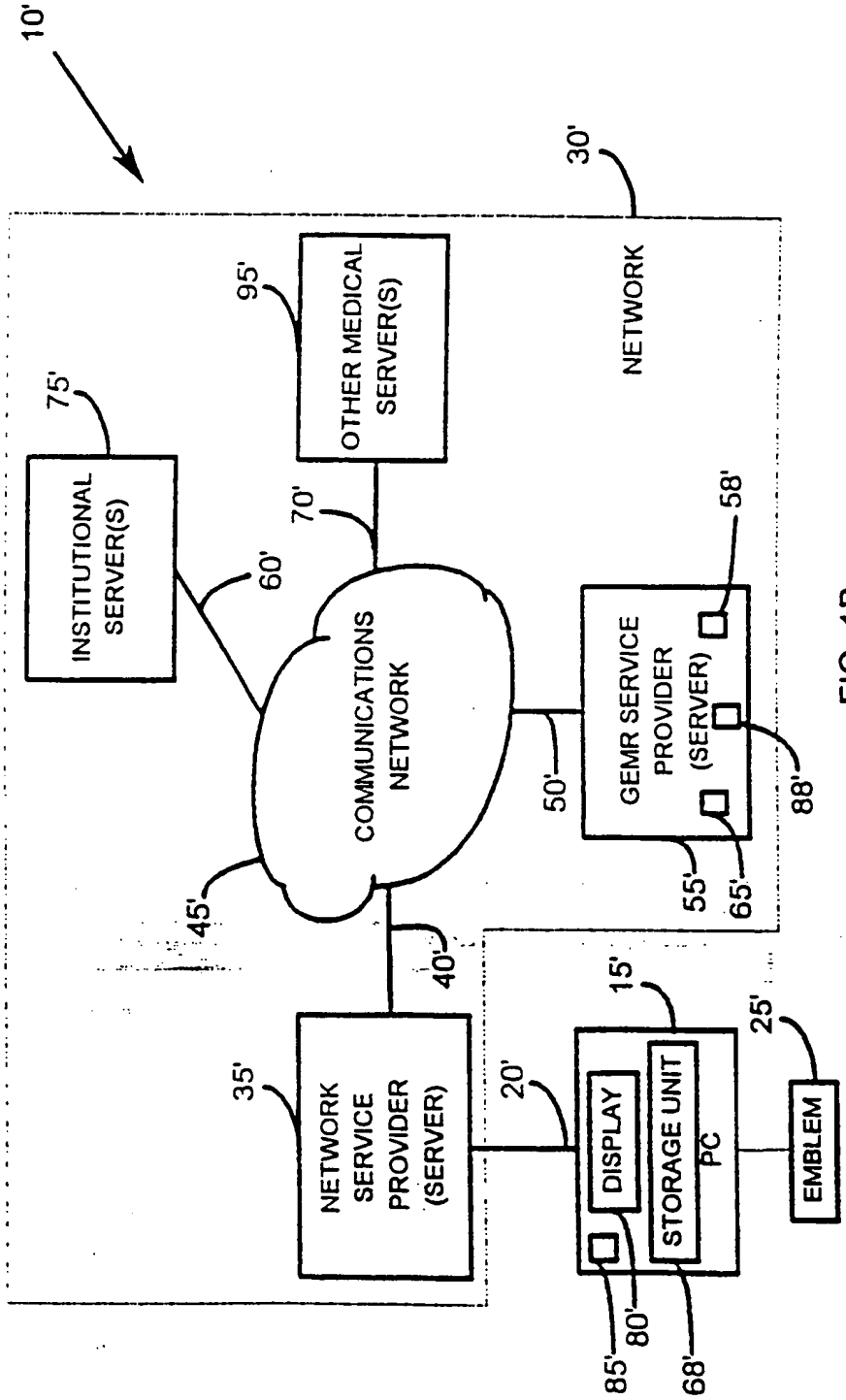
10'
30'
NETWORK
95'
OTHER MEDICAL SERVER(S)
75'
INSTITUTIONAL SERVER(S)
70'
60'
COMMUNICATIONS NETWORK
58'
GEMR SERVICE PROVIDER (SERVER)
50'
88'
55'
65'
45'
40'
15'
25'
35'
NETWORK SERVICE PROVIDER (SERVER)
20'
DISPLAY
STORAGE UNIT
PC
EMBLEM
85'
80'
68'

FIG. 1B

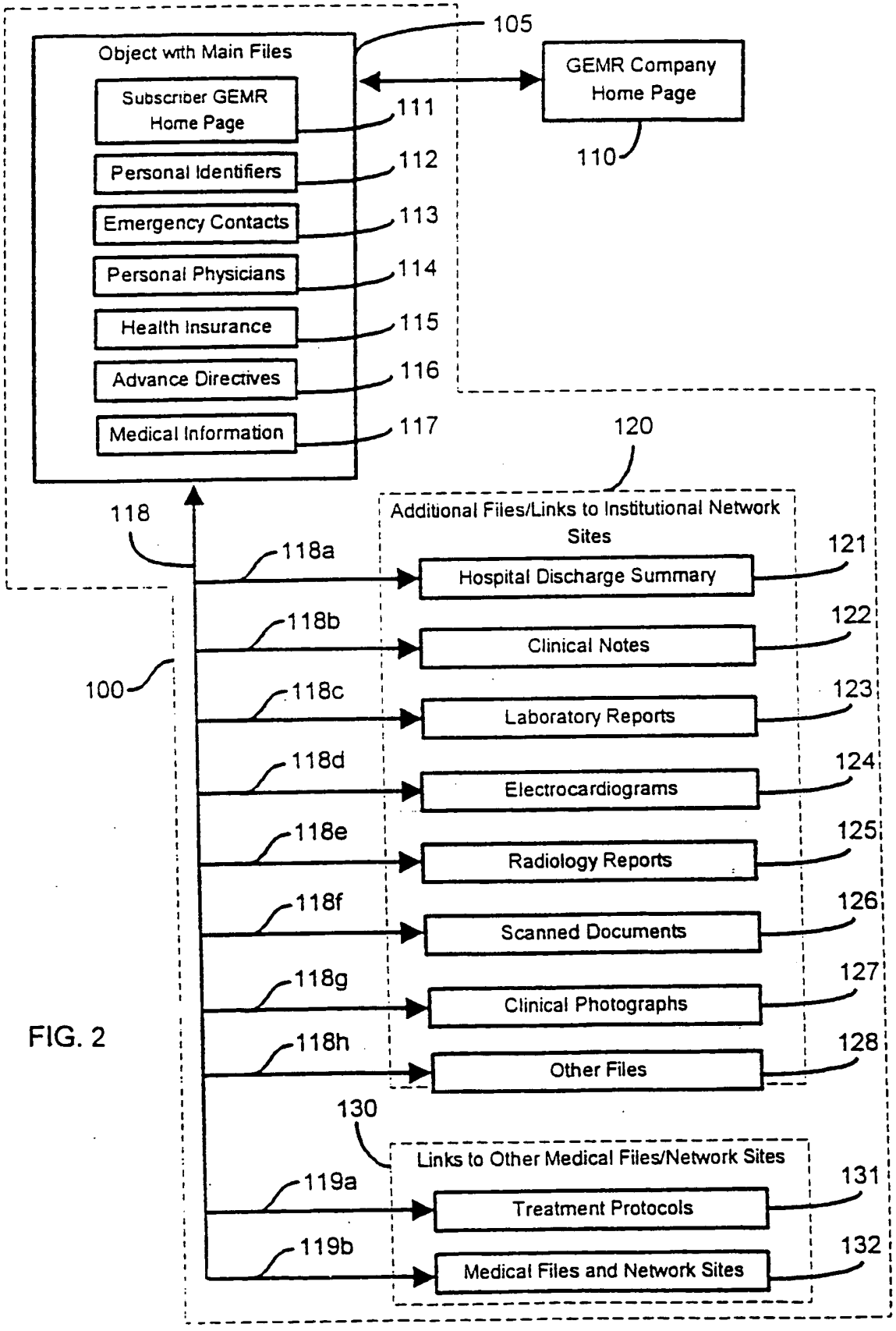
105
Object with Main Files
Subscriber GEMR Home Page
111
Personal Identifiers
112
Emergency Contacts
113
Personal Physicians
114
Health Insurance
115
Advance Directives
116
Medical Information
117
GEMR Company Home Page
110
120
Additional Files/Links to Institutional Network Sites
118
118a
Hospital Discharge Summary
121
118b
Clinical Notes
122
100
118c
Laboratory Reports
123
118d
Electrocardiograms
124
118e
Radiology Reports
125
118f
Scanned Documents
126
118g
Clinical Photographs
127
118h
Other Files
128
130
Links to Other Medical Files/Network Sites
119a
Treatment Protocols
131
119b
Medical Files and Network Sites
132

FIG. 2

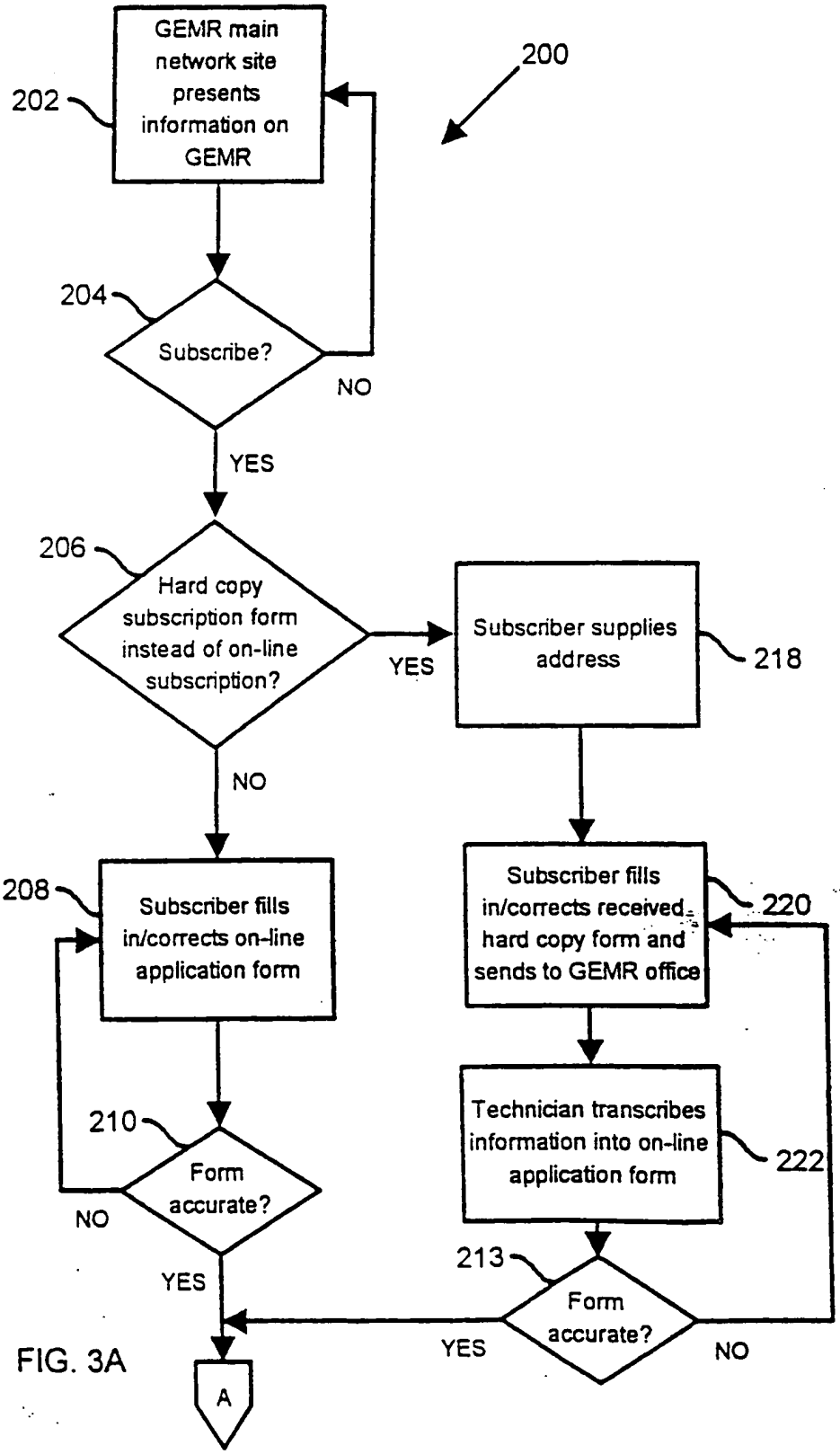
GEMR main network site presents information on GEMR
202
200
204
Subscribe?
NO
YES
206
Hard copy subscription form instead of on-line subscription?
YES
Subscriber supplies address
218
NO
208
Subscriber fills in/corrects on-line application form
Subscriber fills in/corrects received hard copy form and sends to GEMR office
220
210
Form accurate?
NO
YES
Technician transcribes information into on-line application form
222
213
Form accurate?
YES
NO
A

FIG. 3A

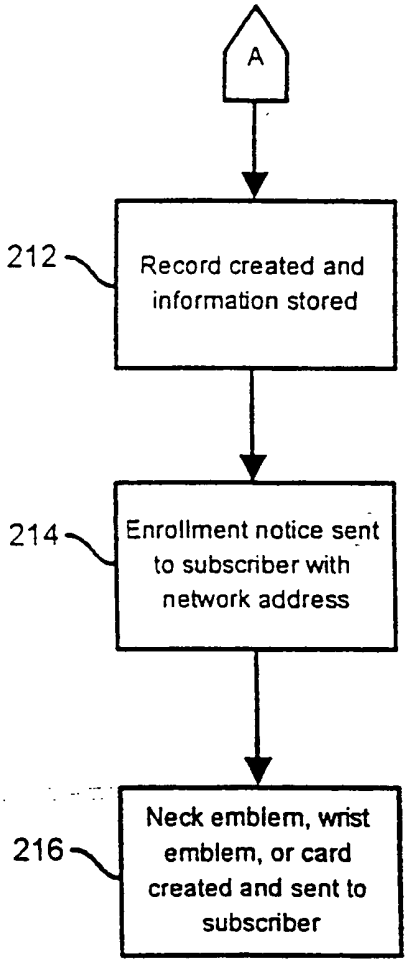
A
212
Record created and information stored
214
Enrollment notice sent to subscriber with network address
216
Neck emblem, wrist emblem, or card created and sent to subscriber

FIG. 3B

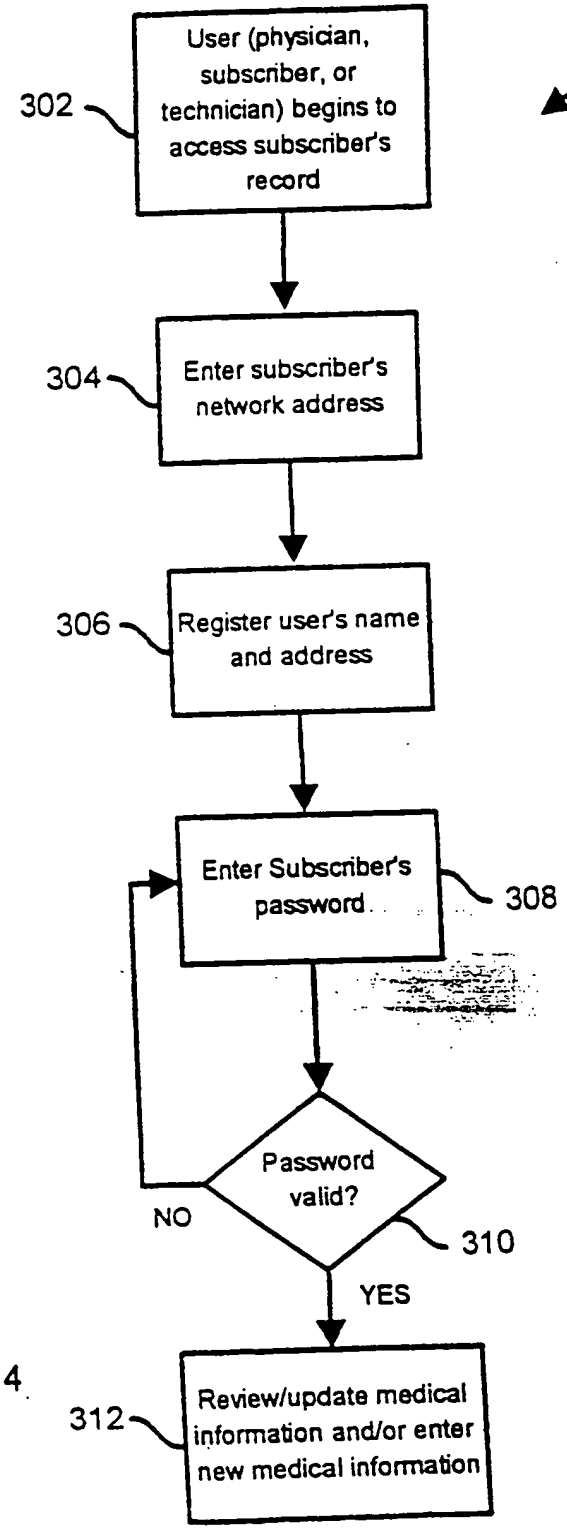
300
User (physician, subscriber, or technician) begins to access subscriber's record
302
Enter subscriber's network address
304
Register user's name and address
306
Enter Subscriber's password
308
Password valid?
310
NO
YES
Review/update medical information and/or enter new medical information
312

FIG. 4

This is the

HOME PAGE

of the

GLOBAL ELECTRONIC MEDICAL RECORD COMPANY

This section will present:

What You Need to Know About GEMR

Contact Information

Testimonials

Subscribe

Frequently Asked Questions

E-Mail

Figure 5

This is

John Doe's

GLOBAL ELECTRONIC MEDICAL RECORD

Please register

Last Name

First Name

Address

City

State/Province

Country

Please enter password

Attention Attending Physician: In case the Subscriber is too ill to provide the password, it should have been written on the Subscriber's Membership Card.
Attention Subscriber: Keep your Membership Card with you at all times.

Submit

Reset

Record Last Updated - Date

Figure 6

PERSONAL IDENTIFIERS

Last Name_____

First Name_____

Middle Name_____

Date of Birth_____

Street Address_____

City_____

State_____

Zip_____

Home Tel. No._____

Social Security No._____

Work Tel. No._____

Occupation_____

Front-view photograph

Side-view photograph

Sex ☐M ☐F **Height**____ft.____in. **Weight**_____**lbs.**

Race_____ **Eye Color**_____ **Hair Color**_____

Religion_____

Identifying Scars or Marks_____

_____

Primary Language_____

Personal Identifiers Emergency Contacts Personal Physicians
Health Insurance Advance Directives Medical Information Text Editor Search Exit
Find Out More About Global Electronic Medical Records

Figure 7

EMERGENCY CONTACTS

Name_____ Relationship_____

Home Tel No._____ Work Tel No._____

Name_____ Relationship_____

Home Tel No._____ Work Tel No._____

Name_____ Relationship_____

Home Tel No._____ Work Tel No._____

Personal Identifiers Emergency Contacts Personal Physicians
Health Insurance Advance Directives Medical Information Text Editor Search Exit
Find Out More About Global Electronic Medical Records

Figure 8

PERSONAL PHYSICIANS & DENTIST

Physician's Name_____

Specialty_____ Tel No._____

Physician's Name_____

Specialty_____ Tel No._____

Physician's Name_____

Specialty_____ Tel No._____

Dentist's Name_____

Specialty_____ Tel No._____

Personal Identifiers Emergency Contacts Personal Physicians
Health Insurance Advance Directives Medical Information Text Editor Search Exit
Find Out More About Global Electronic Medical Records

Figure 9

HEALTH INSURANCE

Primary Insurance Company_____

Policy or Group No. _____

I.D. No._____ **Insurance Company Tel No.**_____

Secondary Insurance Company_____

Policy or Group No. _____

I.D. No._____ **Insurance Company Tel No.**_____

Figure 10

ADVANCE DIRECTIVES

Person(s) to contact for information about your Living Will:

Name_____ **Relationship**_____

Home Tel No._____ **Work Tel No.**_____

Name_____ **Relationship**_____

Home Tel No._____ **Work Tel No.**_____

Person(s) to contact for information about your Durable Power of Attorney for Health Care:

Name_____ **Relationship**_____

Home Tel No._____ **Work Tel No.**_____

Name_____ **Relationship**_____

Home Tel No._____ **Work Tel No.**_____

Person(s) to contact for information about your Organ Donation Directives:

Name_____ **Relationship**_____

Home Tel No._____ **Work Tel No.**_____

Name_____ **Relationship**_____

Home Tel No._____ **Work Tel No.**_____

Person(s) to contact for any medical information that you do not wish to disclose in the following section:

Name_____ **Relationship**_____

Home Tel No._____ **Work Tel No.**_____

Name_____ **Relationship**_____

Home Tel No._____ **Work Tel No.**_____

Personal Identifiers Emergency Contacts Personal Physicians
Health Insurance Advance Directives Medical Information Text Editor Search Exit
Find Out More About Global Electronic Medical Records

Figure 11

GEMR Medical Information http://www.gemr.com/johndoesalias/medinfo.html

MEDICAL INFORMATION

GENERAL HEALTH STATUS

☐ Excellent ☐ Good ☐ Fair ☐ Poor

BLOOD TYPE

☐ A+ ☐ A- ☐ B+ ☐ B- ☐ AB+ ☐ AB- ☐ O+ ☐ O- ☐ Don't Know

CURRENT MEDICAL CONDITIONS **None ☐**

Heart & Circulation
- ☐ Abnormal EKG
- ☐ Angina
- ☐ Cardia Dysrhythmia
- ☐ Collagen-Vascular Disease
- ☐ Congenital Heart Disease
- ☐ Congestive Heart Failure
- ☐ Coronary Bypass Graft
- ☐ Heart Valve Prosthesis
- ☐ Heart Transplant
- ☐ Hypertension
- ☐ Hypertrophic Cardiomyopathy
- ☐ Mitral Valve Prolapse
- ☐ Pacemaker
- ☐ Situs Inversus

Metabolic
- ☐ Adrenal Insufficiency
- ☐ Diabetes/Insulin Dependent
- ☐ Diabetes/Non-Insulin Dependent
- ☐ Hyperthyroidism
- ☐ Hypoglycemia
- ☐ Hypothyroidism
- ☐ Malignant Hyperthermia

Blood
- ☐ Bleeding Disorder
- ☐ Clotting Disorder
- ☐ Hemolytic Anemia
- ☐ HIV Positive
- ☐ Leukemia
- ☐ Lymphomas
- ☐ Sickle Cell Anemia

Eyes & Ears
- ☐ Cataracts
- ☐ Eye Surgery
- ☐ Glaucoma
- ☐ Hearing Impaired
- ☐ Vision Impaired

Intestine, Liver & Spleen
- ☐ Cirrhosis
- ☐ Inflammatory Bowel Disease
- ☐ Liver Transplant
- ☐ Splenectomy

Respiratory
- ☐ Asthma
- ☐ Laryngectomy

Kidney
- ☐ Hemodialysis
- ☐ Kidney Transplant

Neuromuscular
- ☐ Alzheimer's
- ☐ Memory Impaired
- ☐ Myasthenia Gravia
- ☐ Neurosis
- ☐ Psychosis
- ☐ Seizure Disorder
- ☐ Speech Impaired
- ☐ Stroke

Other Conditions: _____

_____

_____

Personal Identifiers Emergency Contacts Personal Physicians
Health Insurance Advance Directives Medical Information Text Editor Search Exit
Find Out More About Global Electronic Medical Records

Figure 12A

GEMR Medical Information http://www.gemr.com/johndoesalias/medinfo.html

CURRENT MEDICATIONS None ☐

Trade name_____ Generic name_____

Dose_____ How Often_____

Trade name_____ Generic name_____

Dose_____ How Often_____

Trade name_____ Generic name_____

Dose_____ How Often_____

Trade name_____ Generic name_____

Dose_____ How Often_____

ALLERGIES None ☐

Drug_____ Usual Reaction_____

Food_____ Usual Reaction_____

Insect_____ Usual Reaction_____

Vaccine_____ Usual Reaction_____

IMMUNIZATIONS:

☐ Cholera Date_____
☐ Hepatitis A Date_____
☐ Hepatitis B Date_____
☐ Influenza Date_____
☐ Japanese Encephalitis Date_____
☐ Measles, Mumps, Rubella Date_____
☐ Meningococcal Meningitis Date_____
☐ Plague Date_____
☐ Pneumococcal Pneumonia Date_____
☐ Poliomyelitis Date_____
☐ Rabies Date_____
☐ Tetanus/Diptheria Date_____
☐ Typhoid Date_____
☐ Yellow Fever Date_____

Other (specify) _____

Personal Identifiers Emergency Contacts Personal Physicians
Health Insurance Advance Directives Medical Information Text Editor Search Exit
Find Out More About Global Electronic Medical Records

Figure 12B

GEMR Medical Information http://www.gemr.com/jonndoesalias/medinfo.html

HOSPITALIZATIONS

None ☐

Condition_____ Date_____

Hospital_____ Tel No._____

Doctor_____ Tel No._____

Condition_____ Date_____

Hospital_____ Tel No._____

Doctor_____ Tel No._____

PREGNANCIES

None ☐

Expected Delivery Date_____ No. of Prior Pregnancies___ No. of Prior Deliveries____

Prior Complications (if any)_____

Obstetrician's Name_____ Tel No._____

SPECIAL NEEDS

None ☐

- ☐ Christian Scientist
- ☐ Contact Lens Prescription (enter below)
- ☐ Drug or Alcohol Dependency
- ☐ Eye Glasses Prescription (enter below)
- ☐ Jehovah's Witness
- ☐ Language Problem
- ☐ Prostheses (specify below)
- ☐ Special Diet
  - ☐ Lactase Deficient
  - ☐ Low Salt
  - ☐ Low Sugar
  - ☐ Kosher
  - ☐ Vegetarian

Details:_____

_____

_____

Figure 12C

ADDITIONAL MEDICAL INFORMATION

Hospital Discharge Summary

Clinical Notes

Laboratory Reports

Electrocardiogram

Radiology Reports

Scanned Documents

Clinical Photographs

Other Files

Treatment Protocols

Medical Internet Links

Figure 12D

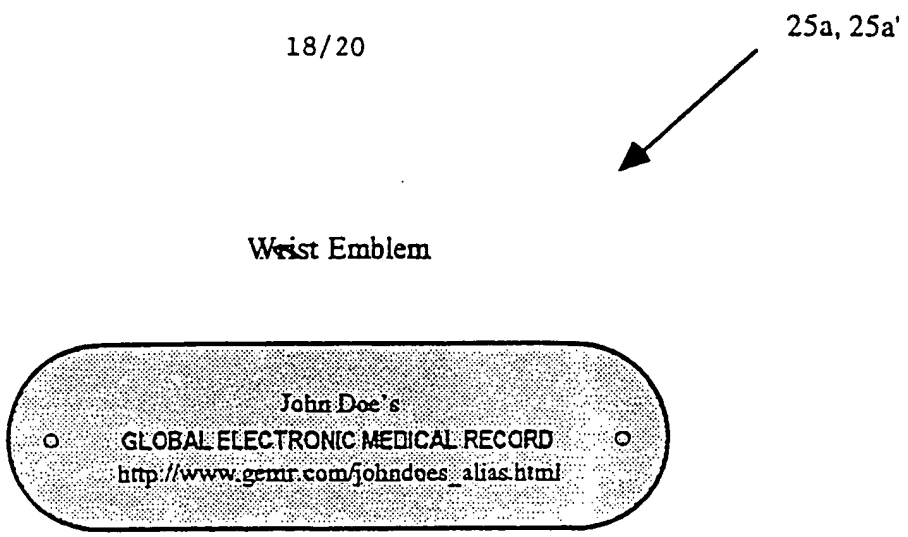
25a, 25a'
Wrist Emblem
John Doe's
GLOBAL ELECTRONIC MEDICAL RECORD
http://www.gemr.com/johndoes_alias.html

Figure 13A

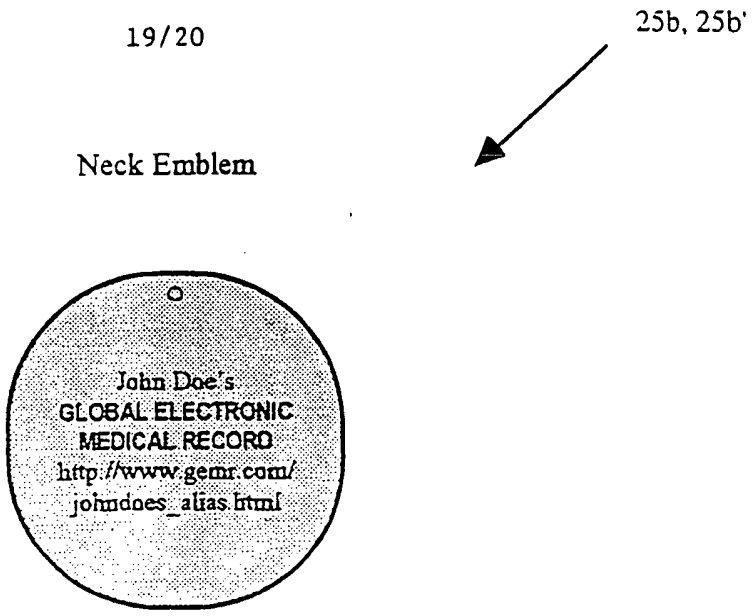
25b, 25b'
Neck Emblem
John Doe's
GLOBAL ELECTRONIC
MEDICAL RECORD
http://www.gemr.com/
johndoes_alias.html

Figure 13B

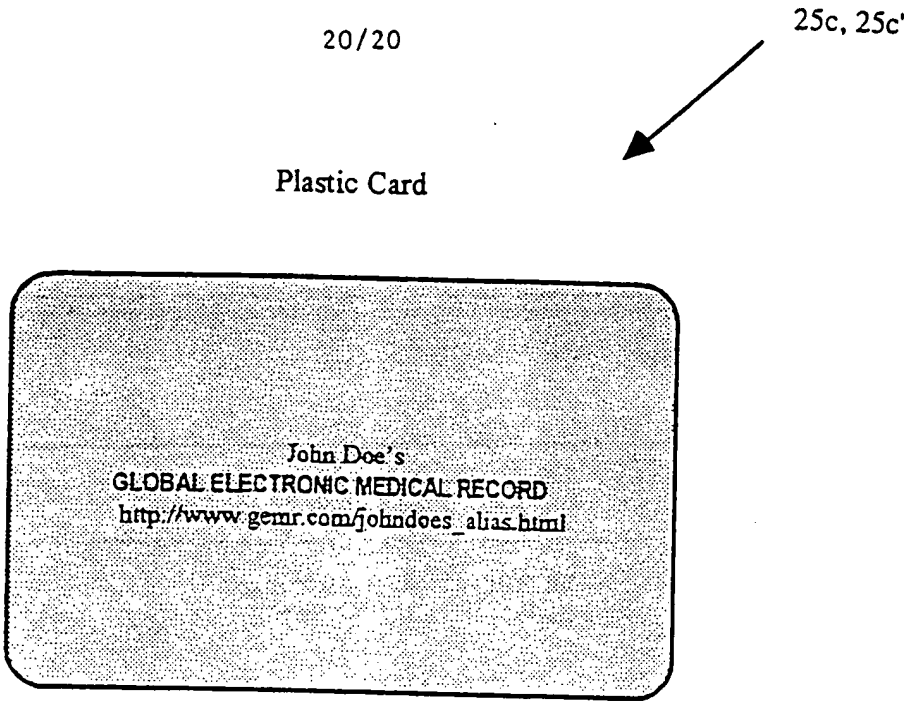
25c, 25c'
Plastic Card
John Doe's
GLOBAL ELECTRONIC MEDICAL RECORD
http://www.gemr.com/johndoes_alias.html

Figure 13C

Patent document cited in search repor	Publication date	Patent family mem' :)	Publication date
WO 9608755 A	21-03-96	AU 3606795 A	29-03-96
		CA 2199934 A	21-03-96
		DE 19580995 D	04-12-97
		EP 0781428 A	02-07-97

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